

## Medication use in craniomandibular disorders and bruxing behavior in subjects with and without dissociation: a comparison study

*Uso de medicação nos distúrbios craniomandibulares e bruxismo em indivíduos com e sem dissociação: um estudo comparativo*

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### ABSTRACT

To assess the use of different medications in CMD patients with and without medication. 111 CMDs with dissociation and 36 CMDs individuals without dissociation were assessed comprehensively using history of signs and symptoms, muscle and joint palpation and history of chief complaint and proper criteria for CMD and bruxism. The Dissociative Experience Scale (DES) and questionnaires were used to gather information about the level of dissociation and different medication use. 100% of those individuals with CMDs + dissociation, CMDs-Dissociation and controls had a history of previous use of medication. The experimental and control groups did not differ in the frequency of history of medication, however, the amount of reported medication was greater in the group with CMD and dissociation (Kruskal-Wallis test  $p=0.02$ ). There was a positive and significant association between the degree of dissociation and the amount of medication use in the CMD + Dissociation group. The CMDs + Dissociation, CMD-Dissociation and the control groups used a variety of medications, the amount of analgesics/anti-inflammatory drugs, muscle relaxants, anti-anxiety and antidepressants drugs was greater in the CMD + dissociation group. The amount of antidepressants used by the CMDs + Dissociation group was greater and significant ( $p=0.02$ ). A positive and significant correlation was observed in the amount of medication use and scores in dissociation in the CMDs + dissociation group (Pearson  $r=0.006$ ). Many CMDs individuals present significant scores in dissociation, thus, a comprehensive evaluation of such patients is mandatory.

### Key Words

Temporomandibular disorders, Dissociation, Medication, Bruxism.

### RESUMO

Avaliar o uso de medicamentos diferentes em pacientes com Distúrbios Craniomandibulares com e sem dissociação. 111 indivíduos com Distúrbios Craniomandibulares + dissociação, 36 com Distúrbios craniomandibulares sem dissociação e 16 controles foram avaliados de forma completa usando história dos sinais e sintomas, palpação muscular e articular, e história da queixa principal e critérios para Distúrbios Craniomandibulares e bruxismo. A Escala de Experiências Dissociativas (DES) e questionários foram usados para obter informação sobre o grau de dissociação e medicação. 100% dos indivíduos com Distúrbios craniomandibulares + Dissociação, Distúrbios craniomandibulares e Sem Dissociação e Controles tinham uma história de uso de medicação. Os grupos experimentais e controle não foram diferentes na frequência do uso de vários tipos de medicação; entretanto, a quantidade de medicação relatada foi maior no grupo Distúrbios craniomandibulares + Dissociação (Teste Kruskal-Wallis,  $p=0.02$ ). Houve associação positiva e significativa entre grau de dissociação e a quantidade de medicação usada no grupo Distúrbios Craniomandibulares com Dissociação. Observou-se uma correlação positiva e significativa entre grau de dissociação e quantidade de medicação usada no grupo Distúrbios craniomandibulares com Dissociação ( $p<0.006$ ). Os grupos Distúrbios craniomandibulares + Dissociação, Distúrbios craniomandibulares- Dissociação e controle tinham história de uso de muitos medicamentos diferentes, a quantidade de analgésicos/anti-inflamatórios, relaxantes musculares, ansiolíticos e antidepressivos usada foi maior no grupo Distúrbios craniomandibulares com Dissociação. Muitos indivíduos com Distúrbios craniomandibulares apresentam valores significantes em dissociação, sendo necessária uma avaliação completa.

### Palavras-Chave

Distúrbios Craniomandibulares, Dissociação, Medicação, Bruxismo.

### Como você deve citar?

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## **1 INTRODUCTION AND REVIEW**

### **1.1 Pain and craniomandibular disorders**

Pain is recognized as being more an experience than a sensation and it has a sensory dimension that registers the nature of the initiating stimulus, including its quality, intensity, location and duration<sup>1</sup>. Pain is undoubtedly the most common condition seen in primary care and the most costly one as well, and musculoskeletal disorders occur very frequently<sup>2</sup>. Multiple pains are usually associated with psychiatric disturbances through somatization and other mechanisms, unfavorable health appraisal, psychiatric impairment, increased severity and persistence of pain and disability<sup>3</sup>. Craniomandibular Disorders (CMDs) are common conditions affecting up to 33% of the population. They are characterized by unilateral or bilateral pain and internal derangements in the temporomandibular joints (ID-TMJ) and/or in the craniofacial muscles<sup>4</sup>. Patients who later develop chronic CMDs appear to have more psychosocial distress before the diagnosis of duration than do individuals who have acute symptoms that later subside<sup>5</sup>.

Jaw pain may be associated with bruxism (BB) at daytime and/or during sleep and it may be worse in the night when patients are having posttraumatic (PTSD) nightmares. Some headaches may also occur and/or can be aggravated by stress-related muscular bracing in the neck and shoulder<sup>2</sup>. The complex nature of CMDs and orofacial pain (OFP), requires a multidisciplinary approach. CMDs and OFP patients are more effectively treated in an interdisciplinary setting at a single facility with dental and medical specialists or by a multidisciplinary team whose members, working in different facilities, coordinate both diagnosis and treatment<sup>1</sup>.

### **1.2 Dissociation**

Dissociation refers to an alteration of the normal integration of experience and is defined in terms of its role disrupting the usually integrated functions of consciousness, memory, identity or perception of the environment<sup>6</sup>. It is considered as a defense against the painful presence of unwanted psychic elements, or as an attempt to rid the mind of them by forcibly eliminating some aspects of the experience<sup>7</sup>. A dissociative disorder (DID) is characterized by the presence of two or more distinct identities, or personality states, that recurrently take control over an individual's behavior accompanied by an inability to recall important personal information<sup>8</sup>. It has been proposed that dissociation is a continuum of increasingly large amounts of dissociated ego which ranges from transient psychogenic amnesia to fugue states and depersonalization to partial DID to fully developed DID.

DID has been correlated with somatization and the typical signs and symptoms of somatization occurring together with dissociation are unusual pain tolerance, headaches which come on suddenly in the midst of a therapy hour and difficulties to respond to psychopharmacological treatment<sup>6</sup>. Clinical studies have identified that 12-30% of psychiatric inpatients have DID and approximately 3-5% would be diagnosed with dissociation<sup>8</sup>. One study<sup>10</sup> evaluated patients in a mental health center and found that 39/151 (25.8%) of them presented with DID, the mean Dissociative Experience Scale (DES) score in such group was about 34.6 and there was a close association between conversion and dissociation. Studies showed that the median score of 17 DID patients was 40.7, the median originally reported in another study was 57.06 in 20 MPD subjects and 4.9 in normal subjects<sup>11</sup>.

### **1.3 Medication use and dissociation**

Patients with DID symptoms present many disorders in the musculoskeletal system, including myofascial pain (MPD) and headaches of muscular origin. Severe headache is the most common symp-

tom in DID individuals<sup>12</sup>, most headaches are vascular, tension-type or a combination of both, and they are usually worst during personality changes<sup>12</sup>.

Many DID patients may have used a wide range of medication trials including major and minor tranquilizers, benzodiazepines for severe anxiety and antidepressants with a consistently poor response, before comprehensive assessment<sup>13</sup>. Multiple biomedical treatments including a variety of drugs in patients with multiple pains, somatization and other psychiatric disorders may be incomplete at best<sup>3</sup>. Such a limited approach in patients with multiple pains, including CMDs may perpetuate an unsatisfying search for pharmacological symptom management<sup>3</sup>. Because in some studies, CMDs and more severe BB have been associated with hysteria and multiple complaints<sup>14</sup> and it is common knowledge that dissociation is associated with a hysterical personality and somatization<sup>15</sup>, it is expected that DID patients use analgesics, anti-anxiety and antidepressant drugs more frequently as compared to non DID controls. Because there is no available information in medication use in CMD patients with and without dissociation, the objectives of this study is threefold:

1. Assess the frequency of medication use in CMD individuals and controls;
2. Evaluate the use of different medications in those CMD s individuals with, without dissociation and controls;
3. Test the hypothesis that the amount of different medications is increased in individuals with CMD and Dissociation as compared to those with CMD and no dissociation and control subjects.

## 2 MATERIAL AND METHODS

Data for this research were gathered retrospectively by examining the charts of 147 CMDs and bruxing behavior individuals with headaches, referred consecutively to a Center for the Study of CMD, Orofacial Pain and Oral Jaw Habits to UNIRG University Center in the years 2011-2014. Each evaluated chart contained accurate data about CMDs signs and symptoms, the most common headache types and BB classified as mild, moderate, severe, and extreme according to the number of signs and symptoms. Information about tenderness to palpation, types and description of pain including pain severity using the Visual Analogue Scale (VAS) in the masticatory system, description of myofascial pain (MPD), types and characteristics of specific internal derangements of the temporomandibular joint (TMJ-ID), characteristics and type of headaches and/or facial pain including duration, frequency and intensity, were also recorded in every chart. Patients were classified as presenting CMDs if they demonstrated specific signs/symptoms, including a complaint of pain in the masticatory muscles, noises in the TMJs, difficulties to perform lateral and/or opening jaw movements, tenderness in the masticatory muscles during palpation and headaches usually of muscular origin. Patients were classified as presenting CMDs and BB according to criteria published previously<sup>14</sup>. Only those charts presenting clear, sufficient and accurate information defining the most common types of headache pain were reviewed and included in the study. Accurate information about medication use including analgesics and anti-inflammatory drugs, anti-anxiety, antidepressants, muscle relaxant and other types of drugs was also collected from the 111 charts in CMD and dissociative patients, from 36 CMDs no dissociative patients and from 16 non CMD controls. All patients in this study presented signs and symptoms of CMDs + BB according to criteria accepted in the literature on CMD and BB, published previously elsewhere<sup>16</sup>.

In order to have information about DID in CMDs and BB individuals, the Dissociative Experience Scale (DES), which is a 28-item self-reported instrument developed by Bernstein and Putnam<sup>17</sup>, was filled out by all individuals presenting CMD and BB. Such a scale is not a diagnostic tool, but it may be

used as a screening instrument for chronic DIDs. A cut-off score of 30 has been shown to be useful in screening DIDs among general psychiatric patients<sup>18</sup>. However, noteworthy of mention is that different levels of dissociation do exist in different individuals. Based on the scores observed in every chart, those individuals presenting 0-10 were considered as presenting CMD without dissociation (Group CMD without dissociation n=36), those presenting scores of 11 or above were considered as presenting CMD with dissociation (CMD and dissociation group n=111). Controls were those referred in the same period of time, presenting with a complaint in the stomatognathic system, but without the characteristics of CMDs. Because every patient referred to the dental school signs an informed consent giving permission to use their material for research purposes, this investigation was approved by the Ethical Committee of the Dental School (003-2015).

Inclusion Criteria to allocate individuals in the groups presenting CMDs and Dissociation, and CMD and no Dissociation:

1. Three or more signs and symptoms of CMDs
2. Presence of mild, moderate, severe or extreme bruxism
3. A signed consent to participate in the study
4. Having fulfilled completely the Dissociative Scale of Bernstein and Putnam
5. Seeking active treatment for facial pain, bruxism and or headache pain.
6. Stringent and accepted criteria from the literature for CMDs, BB, and various headache types.

Exclusion criteria to allocate individuals to the experimental groups

1. No signs and symptoms of CMDs and BB;
2. Presence of neurological disorders;
3. Presence of severe psychiatric disturbances;
4. Not seeking active treatment for CMDs and headaches;
5. Cognitive impairment to respond to the questionnaires including the DES.

Controls (N=16) were those individuals without the characteristics of CMDs, but presenting with a complaint in one or more components of the masticatory system. Most of them were not seeking active treatment for pain and some of their complaints were excessive tooth wear, tenderness to palpation, ear stuffiness and/ or cervical pain.

Statistical analysis: Tests deemed appropriate for this study included the Fisher's exact test, Kruskal-Wallis non parametric test, Pearson Product Moment Correlation Test and Spearman rho (non parametric) to test the correlation between number of medications used and scores in DID in different groups.

### 3 RESULTS

Table 1 presents demographic data and shows that the mean ages in the CMD with dissociation, CMD without dissociation and control groups were about 35.0 (SD=11.0, Range 14–73), 38.0 (SD=12.2, Range=18-75) and 39.6 (SD=12.0, Range 23-63) years, respectively. The frequencies of females in such groups were 91%, 91.7% and 75%, respectively. Table 2 shows that the history of previous or current medication use in the CMD + Dissociation, CMD without dissociation and controls groups was 100%. Table 3 provides information about the frequencies of analgesics and/or anti-inflammatory drugs, muscle relaxants, anti-anxiety, antidepressants and "other medications" reported by patients and controls. Analgesics/anti-inflammatory drugs were used in 85.6%, 83.3% and 100% in the CMD + Dissociation, CMD - Dissociation and control groups respectively (Fisher's exact test, p=0.78, p=0.21 and p=0.16: non

significant differences when comparing pairs of groups). Muscle relaxants were used in 56.7%, 55.5% and 43.8% respectively, in the same groups (Fisher's exact tests  $p=1.00$ ,  $p=0.42$  and  $p=0.55$ : non significant differences when comparing pairs of groups). Anti-anxiety drugs were used by 23.4%, 13.8% and 12.5% of those presenting CMD and dissociation, CMD without dissociation and control group, respectively (Fisher's exact tests  $p=0.25$ ,  $p=0.52$  and  $p=1.00$ : non significant differences when comparing pairs of groups). Antidepressants' use was reported in 41.4%, 25% and 25% in the same groups, respectively (Fisher's exact tests  $p=0.11$ ,  $p=0.27$ , and  $p=1.00$ , non significant differences when comparing pairs of groups). Finally, use of "other drugs" was reported in 13.5% , 19.4% and 6.3% respectively in the same groups (Fisher's exact tests  $p=0.42$ ,  $p=0.69$ , and  $p=0.40$ =non significant differences when comparing pairs of groups). Regarding the total amount of drugs, Table 4 shows medians of 4.90, 3.94% and 3.87, reported by the groups presenting CMD + DID, CMD non DID and controls, respectively (Kruskal-Wallis non parametric test  $p=0.02$ , a significant difference in history of total amount of medication use). Table 5 depicts data about the relationship between amount of medication use and scores in DID in those presenting CMDs + DID (Pearson Rho=0.25,  $p=0.006$ ), CMDs Non DID (Pearson Rho=0.18,  $p=0.27$ ) and Controls (Pearson Rho= -0.009,  $p=0.97$ ). Thus, there was a positive and significant relationship between higher scores in dissociation and increased amount of medication in the CMD + DID group.

Table 1 - Demographic data in 111 patients with CMDs+ DID, 36 CMD- DID and 16 control individuals.

	CMDs +DID		CMDs-DID		Controls	
	N=111		N=36		N=16	
	n	%	n	%	n	%
GENRE						
Females	101	91.0	33	91.7	12	75
Males	10	9.0	3	8.3	4	25
TOTALS	111	100	36	100	16	100
Mean Age	35.0		38.0		39.6	
SD	11.0		12.2		12.0	
Range	14-73		18-75		23-63	

Table 2 - Frequency of medication use in patients with CMDs + DID, CMDs-DID, and controls.

	CMDs+DID		CMDs-DID		Controls	
	N=111		N=36		N=16	
	n	%	n	%	n	%
With history of drugs use	111	100	36	100	16	100
Without history of drugs use	0	0	0	0	0	0
TOTALS	111	100	36	100	16	100

Table 3 - Frequency of specific medication use in patients with CMDs+ DID, CMDs-DID and controls.

Drug type	CMDs+DID N=111		CMDs-DID N=36		Controls N=16	
	n	%	n	%	n	%
Analgesic/anti-inflammatory	95	85.6	30	83.3	16	100*
Amount	304/111=2.7		85/36=2.3		40/16=2.5	
Muscle relaxants	63	56.7	20	55.5	7	43.8**
Amount	112/111=1.09		28/36=0.77		9/16=0.56	
Anti-anxiety	26	23.4	5	13.8	2	12.5***
Amount	34/111=0.30		7/36=0.19		2/16=0.13	
Antidepressants	46	41.4	9	25	4	25.0****
	72/111=0.65		13/36=0.36		4/16=0.25	
Others	15	13.5	7	0.19	1	6.3*****
Amount	17/111= 0.15		8/36=0.22		1/16=0.06	

\*Fisher’s exact test CMDs + DID versus CMDs no DID= p=0.78; CMDs + DID versus Controls p=0.21; CMDs no DID versus Controls p=0.16.  
 \*\*Fisher’s exact test CMDs + DID versus CMDs no DID p=1.00; CMDs + DID versus Controls p= 0.42; CMDs no DID versus Controls p=0.55  
 \*\*\*Fisher’s exact test CMDs + DID versus CMDs no DID, p=0.25; CMDs + DID versus Controls, p=0.52; and CMDs no DID versus Controls, p=1.00.  
 \*\*\*\*Fisher’s exact test CMDs + DID versus CMDs no DID, p=0.11; CMDs + DID versus Controls, p=0.27; CMDs no DID versus Controls, p=1.00.  
 \*\*\*\*\*Fisher’s exact test CMDs + DID versus CMDs no DID, p=0.42; CMDs + DID versus Controls, p=0.69; and CMDs no DID versus Controls, p=0.40.

Table 4 - Amount of medication used in the CMDs + DID, CMDs no DID and control groups (All drugs included in every patient).

	GROUPS		
	CMDs+DID N=111	CMDs-DID N=36	Controls N-16
Mean	4.90	3.94	3.87*
SD	2.7	2.72	2.91
Range	0----14	0---12	1-14

Kruskal-Wallis non parametric test p=0.02. The use of different medications increased from the control to the CMDs-DID and to the CMDs+DID groups.

Dunn’s multiple comparison test:

CMDs + Dissociation versus CMDs-Dissociation p>0.05

CMDs-Dissociation versus controls p>0.05

CMDs-Dissociation versus controls p>0.05

Table 5 - Pearson product moment correlation coefficients between dissociation and amount of medication in individuals with DID, without DID and controls.

	GROUPS		
	CMDs + DID* N=111	CMDs -DID* N=36	Controls** N=16
Pearson Rho	0.256	0.18	-0.009
P value	0.006	0.27	0.97
Significant?	Yes	No	No

\*Statistical test used: Pearson Rho (Parametric) \*\*Statistical test used: Spearman Rho (Non parametric)

#### 4 DISCUSSION

Frequency of medication use in CMDs with, without DID and control individuals.

One goal of this study was to assess a possible difference in medication use in the CMDs + DID, CMD-No DID and control groups. We found that medication was used very frequently but in different amounts in the aforementioned groups. Even though the control group presented no characteristics of CMDs, they have used analgesics/anti-inflammatory, muscle relaxants and anti-anxiety drugs very frequently, probably because they presented some complaint of pain, joint noises, cervical pain and ear complaints. The very frequent use of medications in the CMDs groups with or without DID can be explained by the fact that most patients in such groups presented headaches, cervical, facial and or TMJ pain and some of them also demonstrated high levels of anxiety, depression and somatization. It is very likely that such a frequent use of medication in the CMDs groups may have been related to the presence of pain in different anatomic sites and higher scores in anxiety, depression and somatization. On the other hand, frequent, but lesser amounts of medication in the control group may have been related with the presence of more local pains and/or other complaints mostly of musculoskeletal character.

CMD patients with/ without dissociation usually have pain in single and multiple sites including headaches, anxiety, depression and somatization, which explains the need of frequent use of different medications. Some CMDs patients may present chronic pain and a tendency to manifest an interior conflict through physical symptoms<sup>19</sup>. Additionally, it has been reported that headaches are a dynamic condition and regular follow up is needed for adjustments in medication and to reinforce pharmacological and nonpharmacological modalities of therapy<sup>20</sup>. CMDs patients in this study had used many different drug types to alleviate pain, anxiety and or depression. Additionally, if patients are not satisfied with treatment results, they may try additional medications, thus increasing the variety, duration and amount of medication they use. In this regard and noteworthy of mention is that headaches may worsen at times, particularly during stressful events or at times of interpersonal conflicts, thus increasing medication use<sup>20</sup>.

In one study in CMDs individuals<sup>14</sup>, researchers reported higher scores in hysteria and greater number of painful sites with the severity of BB. Because hysteria is closely related with both somatization and with DID in many CMDs individuals, such disorders may increase the need for medication use in many CMDs patients. Such assumption is in line with one investigation<sup>21</sup>, indicating that DID is a chronic disease of many symptoms that occurs in the context of overwhelming experiences in childhood. Because of the myriad of signs and symptoms present in such patients, they may use a variety of medications, very frequently. Poor compliance with the use of medication and with clinicians'

instructions may also increase the shift to other medications in CMDs patients, thus, further increasing the frequency of their use. Following this line of reasoning, one review of the literature<sup>20</sup> reported that less than 50% of headache patients complied with proper use of medication and more than 10% never filled their initial prescription.

Approximately 75% of headache patients expressed negative or ambivalent attitudes toward medication use because of potential short or long term side effects<sup>20</sup>. Poor compliance and inadequate medication use may lead to treatment failures, recurrence of symptoms, and use of greater amounts of different medications in CMDs patients. Furthermore, ongoing research indicates that medication does not work well for people with DID, results are unpredictable, having little or no effect and unintended exaggerated effects. In other cases, medications may work in the beginning, but soon cease having any therapeutic effect<sup>22</sup>. In most cases of chronic headaches, daily opioids fail to provide sustained relief or reduce functional impairment. Frequent opioid use is likely to contribute to central sensitization and progressive worsening of the headache through multiple mechanisms<sup>23</sup>.

Frequency of different medication use in those with, without dissociation and control individuals.

A second objective of this investigation was to assess the use of different medications in the groups with and without DID and controls. In the current study, most patients in the CMDs groups and control one reported the use of analgesics and anti-inflammatory drugs (Fisher's exact test  $p=0.78$ ,  $p=0.21$ , and  $p=0.16$ , showing that the differences in the use of such drugs were not significant). Such high frequency of analgesics use was expected as analgesic overuse often accompanies the treatment for headaches which are common in patients with DID, a disorder occurring very frequently in those individuals presenting with substance abuse<sup>8</sup>. In the current study, CMDs with DID used analgesics more frequently than CMDs without DID. Although a positive trend was observed, the difference did not reach significance.

We also found that 56.7%, 55.5% and 43.8% individuals in the CMD + DID, CMD no DID and Controls reported the use of muscle relaxants (Fisher's exact tests  $p=1.00$ ,  $p=0.42$ , and  $p=0.55$ , respectively), demonstrating no significant differences in muscle relaxants use when comparing such groups. Because muscle relaxants were used very frequently in these three subgroups of CMD patients with and without DID and in the control group, the outcome of the current study has partial support in one investigation<sup>24</sup>, asserting that centrally acting muscle relaxants are frequently used in the treatment of craniomandibular disorders. Flexeril or cyclobenzaprine hydrochloride, which is chemically similar to antidepressants, is the drug of choice for generalized muscle pain<sup>24</sup>. In fact, patients and controls in this study reported the use of Miosan (Cyclobenzaprine), Tandrifax and Torsifax (Brazilian brand names), very frequently.

In the current study, 23.4%, 13.8% and 12.5% patients in the CMD + DID, CMD - DID and control groups, respectively, reported the use of anti-anxiety drugs, but the difference was not significant when pairs of groups were compared (Fisher's exact tests  $p=0.25$ ,  $p=0.52$ , and  $p=1.00$ , respectively). CMDs and DID individuals in the current study demonstrated a higher frequency in the use of anti-anxiety drugs. This is not surprising, as benzodiazepines have been the most successful agents used to calm thought processes and decrease switching in dissociative patients and alprazolam is the most commonly used agent in that group<sup>25</sup>.

41.4%, 25%, and 25% of the CMD + DID, CMD - DID and Controls reported the use of antidepressants. The group presenting CMDs + DID demonstrated higher frequency of antidepressant use (41.4%) when compared with the CMD no Dissociation group and the difference almost reached significance (Fisher's exact test  $p=0.11$ ). This frequency of antidepressant use was much lower as compared to the frequency of 62.1% of antidepressant use reported in a previous investigation<sup>25</sup>. However, patients



in such a study demonstrated higher scores in dissociation, thus probably presenting higher scores in depression and somatization as well, indicating increasing need of antidepressant use.

When CMDs with and without DID groups were pooled together, the frequency of reported antidepressant use was about 37.4%, frequency, which was very similar to the prevalence of 40.8% of antidepressant use reported in a previous study<sup>26</sup>. Because severe and or extreme bruxism with CMDs are viewed as those presenting with more intense pain, higher scores in anxiety, depression, somatization and hysteria, and in the current study, those with CMDs and DID demonstrated higher scores in antidepressants use, the results of this investigation is partially confirmed by a previous study<sup>26</sup>, demonstrating that the frequency of antidepressants use increased with the severity of both CMDs and BB.

When comparing the use of "other drugs", their frequency was lower in the three groups and differences did not reach significance. The greater use of "other drugs" in the CMDs with and without DID probably indicates higher scores in somatization and other psychiatric disorders, but such assumption needs further validation and scrutiny.

Because there were not statistical significant differences in the frequency of medication use in the aforementioned groups, studies looking at the amount, frequency, type and duration of medication use in similar groups would be more fruitful as compared to investigations merely examining the frequency of medication use. It may be that when proper diagnosis is not carried out and inadequate treatment is instituted, the complaints become more chronic, pain occurs more frequently, is more intense, and encourage clinicians and /or patients to look for additional and "more effective medications", thus increasing the use of different ones. Supporting in part this point of view, one study<sup>20</sup> defends the notion that in patients with headaches, somatization and other psychological disorders, the older stepped-care approach, starting with the simple analgesics in every headache sufferer regardless of disability and advancing the use of such drugs as needed, based on patient satisfaction with treatment, may cause unnecessary suffering and be detrimental to the patient's collaboration with treatment.

It may also be that in most cases, patients are initially treated as if analgesics were the only therapeutic approach necessary to alleviate their signs and symptoms, and also as if other disorders were not present concomitantly, and at the same time ignoring the presence of psychological disorders including anxiety, depression, somatization and anger-in. This line of evidence is supported in part by one study<sup>24</sup>, indicating that anti-anxiety medication may be prescribed as supportive therapy in cases where high levels of stress and anxiety are associated with CMDs. For instance, diazepam can be prescribed for acute exacerbations of masticatory muscle pain, sleep disorders and BB. Additional and strong support for this line of evidence comes from one research<sup>1</sup>, indicating that in some patients an occlusal splint may not be the only mode of treatment presenting limited effectiveness. If so, such patients may be referred to further treatment with psychotherapy and antidepressants use.

Because in many patients with headaches and psychiatric co-morbidities the Hamilton Rating Scale for anxiety and depression may be high in the most common headache types<sup>20</sup>, it would be more appropriate to use a combination of therapy including anti-anxiety, antidepressants, occlusal splints and analgesics, rather than using an approach based on the older stepped-care management with analgesics.

Amount of medication use in those with CMD and dissociation, CMD without dissociation and controls.

In the current investigation, it was found that the amount of analgesics used in the groups with CMDs + DID, CMD - DID and controls was more or less equivalent. The amount of muscle relaxants that was reported by such groups decreased from the CMD + DID group to the CMD- DID group and the

amount of anti-anxiety drugs reported by patients in such groups decreased from the CMD group with DID to the control one. Finally, the amount of antidepressants reported by the same groups decreased from the group with CMD + DID to the group without DID and to the control one. Because greater amounts of anti-anxiety and antidepressant drugs were used in the CMDs groups with and without DID, such findings indicate that such groups present higher scores in anxiety, depression and muscle tension and/or that they are more unstable psychologically.

This line of reasoning is in accordance with one study<sup>1</sup>, indicating that a variety of psychological factors play a role predisposing, perpetuating and/or maintaining a pain disorder. Personality, emotional and attitudinal characteristics of CMDs individuals can be interpreted as psychological predisposing factors. Higher levels of somatization disorders occurring frequently in those patients with CMDs and DID and in those with headaches, possibly due to heightened vigilance to bodily sensations, may amplify pain<sup>20</sup>, thus they may use greater amounts of analgesics, anti-anxiety and antidepressant drugs. Substance abuse occurs very frequently in 33% of dissociative patients<sup>8</sup>.

Because medication overuse is a common finding in patients with CMDs and/or headaches, pharmacological and behavioral treatment may show significant benefit following drug withdrawal in patients with medication overuse headaches<sup>27</sup> and/or in those with CMDs signs and symptoms. Depression is a common disorder in DID patients and they are more likely to use antidepressants to alleviate their suffering<sup>28</sup>. CMDs and DID patients in the current study used greater amounts of antidepressants and one study reported that it is not rare to find DID patients suffering from depression and confusional states. Such patients may fail to respond to any kind of drug treatment and may shift from one drug to the other to alleviate pain, tension, anxiety and depression<sup>29</sup>. Patients with refractory head, neck and facial pains presenting with daily or nearly daily headaches may use larger amounts of multiple medications,<sup>23</sup> including antidepressants and anti-anxiety drugs. CMDs patients with DID in the current study, used greater amounts of anti-anxiety and antidepressant drugs. It may be that such patients do not respond to conventional drugs and they may present with intense anxiety and affective symptoms<sup>21</sup>. If so, they may also shift to drugs that alleviate and/or are more effective for their intense affective disorders.

To the extent of our knowledge, this is the first study in the literature assessing medication use in patients with CMDs and BB with or without DID. Because flaws are inherent in most studies in this field, the results herein presented should be replicated in other studies using similar methods so as to increase their validity and reliability.

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