

Depression and Hostility in Craniomandibular Disorders and Bruxing Behavior subjects with current history of nightmares.

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Abstract:

Introduction: In the last two decades, social, psychological and psychiatric factors have been accepted as part of the etiology of Craniomandibular Disorders and Bruxing Behavior. Little is known about the relationship of these disorders with hostility and depression in those reporting nightmares. **Goals:** Evaluate scores in depression and hostility in Craniomandibular Disorders individuals with and without history of current nightmares. **Methods:** Medical records of Craniomandibular Disorders and Bruxing Behavior subjects with and without history of current nightmares were consecutively retrieved from a database and retrospectively evaluated. Clinical examination, history of chief complaint self-report, questionnaires, palpation, biomechanical testes, the Cook and Medley questionnaire and the Beck Depression Inventory were used to gather data. A self-reported instrument was used to gather information about presence, types and affects in nightmares. Forty-five individuals with history of current nightmares and an equal number without history of nightmares were evaluated and compared regarding hostility and depression scores. Man-Whitney statistics was used to analyze data. **Outcome:** Mean BDI in the subgroup reporting nightmares was about 16,8 (SD=6,8, range=6-32) as compared with 9,7 (SD=4,0, range=3-20) in the subgroup reporting no nightmares. Mann-Whitney statistics ($p<0,0001$), a statistically and extremely significant difference. Mean in hostility was about 20,7 (SD=4,0, range=12-29) in the subgroup reporting current nightmares as compared to 16,7 (SD=3,3, range=11-23) in the subgroup reporting no nightmares. Mann-Whitney statistics ($p<0,0006$), a statistically and extremely significant difference. **Conclusion:** The subgroup demonstrating signs and symptoms of Craniomandibular Disorders, Bruxing Behavior and reported current nightmares showed higher scores in both depression and hostility as compared with a similar group without nightmares. Thus, there is an association between hostility, depression, and nightmares in subjects with Craniomandibular Disorders and Bruxing Behavior.

Keywords: Craniomandibular Disorders. Bruxism. Depression. Hostility. Nightmares.

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I. Introduction

Craniomandibular Disorders (CMDs) constitute terms used in Medicine, Dentistry and Physical Therapy to describe some clinical signs and symptoms occurring in the temporomandibular joints (TMJs), masticatory muscles and adjacent anatomic structures^[1] Signs and symptoms of CMDs are widespread in clinical and nonclinical populations and include a complain of pain in the masticatory muscles and TMJs, a diversity of joint noises, difficulties to perform normal jaw movements, tenderness to palpation of the masticatory muscles and headache of musculoskeletal origin^[2].

With a better understanding of a multifactorial etiology for CMDs, it has become more clear in the last two decades that social, psychological and psychiatric factors have a significant role in the initiation and perpetuation of CMDs signs and symptoms. In some studies, a clear association between CMDs, bruxing behavior, and sleeping related symptoms including high prevalence of nightmares and awakening early in the morning, has been observed^[3] Some psychiatric disorders including somatization and dissociation may be observed more frequently in CMDs subjects as compared to control no CMDs subjects^[4] Furthermore, CMDs

subjects may complain of high intensity pain, pain-related impairment and high to moderate levels of somatization and depression^[5].

Depression, anxiety, stress and somatization are the commonest psychological factors which in the last two decades have been associated with CMDs in a large number of investigations. Depression is expected to be observed frequently in CMDs individuals as scores in hostility and anger-inward are higher in CMDs as compared to control individuals according to more recent studies^[6]. Furthermore, symptoms of depression and anxiety have also been considered as risk factors for CMDs and psychopathology is more likely to be observed in chronic cases of CMDs^[7]. Low energy and pessimism associated with depression in chronic pain patients may contribute to deteriorate patients' capacity to adapt and to develop proper coping skills with pain and adversity^[7]. Most CMDs and BB individuals are females and they demonstrate higher scores in stress and depression^[8]. Thus, in clinical practice, anxiety and depression may contribute to less effectiveness of therapeutic approaches for CMDs even when such approaches are sound and reliable and effective in normal psychological conditions. .

First studies on psychological and psychiatric aspects of bruxing behavior (BB) and CMDs, have emphasized the role of frustration, anger and hostility. For instance, Mikami^[9] in his studies on psychogenic aspects of BB and CMDs, related bruxing behavior with stress, described the symbolic role of teeth to "release aggression", and the relationship between life dilemmas which make bruxers more enraged, hostile, tense, anxious and aggressive^[9]. His review of the literature emphasized the role of strangulated aggression, anxiety, frustration inward, emotional instability, hostility and depression. Hostility is conceptualized by some as attitudes or behaviors that predisposes the individual to view others as untrustworthy, undeserving and immoral and as a source of provocation and mistreatment^[10]. Thus, the hostile individual behaves in a way in which he sees or perceives others as threatening, antagonistic. On the other hand, an hostile individual is perceived by the observer as ready to demonstrate anger, threat, pessimism and antagonism. Anger is not necessarily expressed by hostile individuals.

Nightmares are bad dreams that may or may not awaken the dreamer. They constitute the most prevalent and commonly reported form of dream disturbance^[11]. Such sleep disorder are usually described as frightening and disturbing mental experiences occurring more frequently in females^[12]. Although awakening does not occur in all nightmare sufferers, such sleep disorders are also described as vivid and terrifying nocturnal episodes in which the dreamer is abruptly awakened from sleep^[13]. Recent studies indicate that not only fear but aggression, failure, misfortune, anger, sadness and frustration^[12] can be reported by nightmare sufferers.

Nightmares and psychopathology. Some researchers defend the notion that nightmares occur more frequently and intense in victims of some form of abuse and or severe physical and or emotional trauma^[13]. Thus, nightmares are frequently but not exclusively observed in victims of posttraumatic stress disorder (PTSD). The frequency of nightmares and signs and symptom of posttraumatic stress occur associated with more severe trauma, hostility and depression^[13]. There is an association between nightmares, depression, severe psychiatric disorders and panic attacks^[13,14]. Some individuals report that their nightmares involve intensification of very different unpleasant emotions including extreme sadness, anger and fear^[11].

Even though, there are hundreds of clinical and experimental studies regarding psychosocial, psychological and psychiatric aspects of CMDs and orofacial pain has benefited from studies on sleep medicine, there is a paucity of studies about the relationship between nightmares, CMDs and psychological factors. Consequently, the goal of this investigation is twofold:

1. Evaluate scores in depression in nightmare sufferers with CMDs and BB and in those CMDs and BB individuals reporting no nightmares;
2. Assess scores in hostility in the same subgroups

II. Methods

Patients referred consecutively to a Unit specialized in the diagnosis and treatment of CMDs and Orofacial Pain at UNIRG University School of Dentistry, are usually evaluated using a comprehensive and standardized clinical procedure described as follows: Taking the history of the chief complaint, palpation of the TMJs and masticatory muscles, use of biomechanical tests to determine and diagnose the type of TMJ internal derangement, use of questionnaires, clinical examination and self-report to assess presence and severity of BB, another questionnaire to assess presence and type of headache. Finally, psychological tests including the Beck Depression Inventory, the Cook-Medley instrument to evaluate hostility, the Taylor Manifest Anxiety Scale and instrument to evaluate presence, situations and affects reported by those CMDs and BB subjects reporting nightmares. Once examination, palpation and biomechanical tests are completed and subjects respond to various questionnaires, the clinical records are stored in a database for future use when there is interest in testing a specific variable, for instance, depression and hostility in subjects who reported nightmares.

Recently we retrieved 45 medical and dental records from subjects presenting with signs and symptoms of CMDs, BB who had reported history of nightmares and 45 medical and dental records from CMDs and BB who did not report presence of nightmares during sleep. Such medical records were evaluated regarding presence or absence of nightmares, scores in depression and hostility.

Criteria for the presence of CMDs: A complaint of pain in the masticatory system, presence of joint noises using self-report and gentle palpation, difficulty to perform normal jaw moments, tenderness to palpation, and headache of musculoskeletal origin.

Criteria for nightmares. The meaning or definition of a nightmare was explained to the patient. Then, he or she was asked about the presence or absence of current nightmares. Once he or she responded to these questions he or she was invited to respond to a questionnaire about nightmares or dreams. A yes or No response was sufficient to accept that he or she was or no a nightmare sufferer. The questionnaire was responded in order to gather information about types of dreams or nightmares and major affects displayed during nightmares.

Exclusion Criteria: Subjects and controls presenting with severe psychiatric or psychological disorders, cognitive difficulties to respond properly to questionnaires, presence of neuromuscular disorders including but not restricted to Parkinson Disease, speech and motor disorders and those subjects that had been examined but by some reasons their information was incomplete and could not be neither stored in the database nor used for any epidemiological or clinical study and thus, they were excluded from the investigation.

III. Measures

Both the Beck Depression Inventory or BDI^[15] and the Cook-Medley Instrument^[16] were used to gather data in the current investigation. The BDI is probably the most widely used instrument to assess depression. The BDI is a self-reported questionnaire composed of 21 questions; Following some instructions, subjects are invited to respond freely to the questionnaire choosing the question that better describes the way they have been feeling during the past two weeks including today. Questions are hierarchically arranged in such a way that the first answer expresses normality and the last expresses the worst on a particular aspect of depression, for example, pessimism or guilty feelings. The questionnaire is responded in about 15 minutes.

The Cook and Medley instrument^[16] (HO is a standard instrument used in psychology to measure temperament, more specifically degree of hostility. The instrument is derived from the Minnesota Multiphasic Personality Inventory. Scores from this instrument represent an individual disposition toward cynicism and chronic hate. It has been used to evaluate hate, hostility and disposition to develop systemic disorders, namely, cardiovascular disease. In this investigation we used 46 questions of the instrument to evaluate the hostile or non hostile response of the individual to a particular situation of the everyday life.

Statistical analysis

The Mann-Whitney nonparametric statistics was used in the current investigation to compare statistical or non statistical differences in age, depression and hostility in the CMDs and BB subgroup with nightmares and in the control subgroup without.

IV. Outcome

In the current investigation, an experimental subgroup of 45 CMDs and BB individuals with self-reported history of current nightmares was evaluated and compared with another subgroup of CMDs and BB individuals with no history of nightmares. Mean age in the CMDs, BB with current history of nightmares was about 31,4 years (SD=10,7, range=14—61) as compared with 35,7 years (SD=13,9, range=15-66) in the CMDs and BB subgroup with no history of nightmares. There was no difference in age when the two subgroups were compared (Mann-Whitney Statistics $p=0,14$). Mean in depression was about 16,8 (SD=6,8, range=6—32) in the CMDs, BB with current history of nightmares and 9,7 (SD=4,0, range=3—20) in the CMDs, BB and no history of current nightmares. There was a statistically very significant difference when these means were compared (Mann-Whitney statistics $p<0,0001$), indicating that those subjects with CMDs, BB and current nightmares were more depressed. Mean in hostility was about 20,7 (SD=4,0, range=12—29) in the CMDs, BB and history of current nightmares as compared to 16,7 (SD=3,3, range=11—23) in the CMDs, BB and no history of nightmares subgroup. Because Mann-Whitney statistics yielded a p-value $<0,0006$, we can state that CMDs and BB subjects with a history of current nightmares were more hostile.

V. Discussion

In the current investigation higher scores in **depression** were observed in the subgroup demonstrating signs and symptoms of CMDs, BB that reported current nightmares. It may be that because CMDs are considered by some as psychosomatic disorders in which some forms of childhood abuse are characteristics, CMDs and BB individuals not only are depressed, but they are more vulnerable to discharge or try to get rid of

powerful affects including anger, hostility, rage and frustration in disguised forms in their bad dreams and nightmares. It is now accepted that CMDs and BB are clearly associated with psychological, social and psychiatric factors. Furthermore, there is strong evidence that anxiety, higher reactivity to daily stress, somatization and depression predominate in CMDs and BB subjects. These considerations are in part supported by findings in the current study in which nightmare sufferers demonstrated higher scores in depression.

A direct relationship between nightmares, bad dreams and depression is difficult to be demonstrated. However because of the “day and night continuum hypothesis”^[17] suggesting that night and day are closely interrelated, it seems apparent that bad dreams, nightmares and insomnia may contribute to depression in the following day. In turn, depression, and stressful life events may contribute to abnormal sleep physiology at night. Supporting in part these considerations, one investigation^[12] indicates that aggression, sadness and frustration which are closely related with depression, may be frequently reported in bad dreams.

One investigation^[9] reviewed the psychological and psychiatric factors related to bruxing behavior and described bruxers as those who use the teeth to release aggression, they may be described as anxious, tense and enraged who stragulate aggression, take anger inward and show more depressive symptoms as compared to non bruxers. Lajnert and associates^[8] evaluated a subgroup of CMDs subjects and even though they not asses the presence of nightmares, their study showed that CMDs subjects reporting higher scores in depression were more prone to somatize and had experienced a greater number of stressful events in the past. Additional support for the outcome in the current investigations comes from another study^[5] which although did not evaluate nightmares in a group of CMDs subjects, researcher reported that patients with CMDs have a profile characterized by higher level of disability, more severe pain, and high to moderate scores in depression and somatization. Higher scores in anger taken inward which directly contributes with higher scores in depression, have been demonstrated in CMDs and BB when compared to control ones^[1].

There is a close association between dissociation of the mind, somatization and depression. Dissociation is more closely related with somatization and nightmares and nightmares whereas depression seems to be a by product of somatization, Thus, if someone demonstrates higher scores in dissociation, he or she is more vulnerable to depression via somatization. On the other hand, dissociation, somatization, depression and even nightmares may be closely related with severe traumatic experiences. In line with these considerations, one investigation^[18] evaluated dissociative experiences in nightmare and non nightmare sufferers and reported that nightmare sufferers score higher in dissociation and traumatic experiences. Nightmares are forms of dissociation and dissociated individuals demonstrated higher scores in depression. In this regard, it makes a lot of sense to find higher scores in CMDs and BB reporting nightmares. There is a positive relationship between psychological factors and CMDs. CMDs and BB individuals demonstrate higher scores in depression and anxiety indicating psychological and/or psychiatric disorganization or maladjustment^[7]. Even though CMDs individuals constitute a heterogeneous group of pathological disorders in the masticatory system, CMDs individuals are frequently affected by some psychological or psychiatric disorders including stress, anxiety, somatization and depression^[19].

Because psychological and psychiatric factors have been correlated with the presence of signs and symptoms of both CMDs and BB, subjects in this category are more vulnerable, susceptible and present with unstable sleep at night as compared to CMDs and BB with less severe forms of trauma in childhood and or adolescence and or with less severe daily stress. In this regard, higher scores in depression in these subjects and the tendency to experience fearful and distressing nightmares may be a byproduct of those traumatic events. In this regard, Revonsuo^[17] asserts that dream content is powerfully modulated by certain types of waking experiences^[17], for instance severe daily stress and or threatening events. On the other hand, bad sleep, insomnia, bad dreams and nightmares may act as elements that worsen the quality of “life at night”, and thus act as a biofeedback mechanism, increasing depression. These considerations are echoed by clinical observations in CMDs and BB subjects with severe pain and insomnia that when treated with appropriate medication and occlusal splints, responds with optimism and report an improve in their quality of life^[20]. There are no studies attempting to correlate sleep bruxism, nightmares and CMDs. However, its has been demonstrated that more frequent and more severe depressive symptoms can be observed in subjects with sleep bruxism and CMDs^[20].

On the other hand, bad sleep, insomnia, bad dreams and nightmares may act as elements that worsen the quality of “life at night”, and thus act as a biofeedback mechanism, increasing depression. These considerations are echoed by clinical observations in CMDs and BB subjects presenting with severe pain and insomnia that when treated with appropriate medication and an occlusal splints, responds with optimism probably decreasing anxiety and improving quality of life.

Hostility

Most CMDs individuals are characterized by higher scores in depression, somatization, anger and hostility taken inward with lower threshold for frustration and stress in whom somatization trends are

reactivated by daily stress facilitating the development of clinical signs and symptoms. These considerations are partially in accordance with the observations of higher scores in hostility found in the CMDs and BB subgroup that reported nightmares. It may be that at least one subgroup of CMDs and BB subjects hold aggression, hostility, rage and anger inward that may be activated by stressful life events. Alternatively, such individuals have higher scores in somatization, but do not externalize anger and hostility and prefer to keep those affects inward. This anger, frustration or hostility may be acted out at night and become background material for the elaboration of major themes in bad dreams and nightmares.

In line with these clinical findings considerations Mikami^[9] reviewed the literature on the psychological and psychiatric aspects of BB and described bruxers as those characterized by “strangulation” of their aggression. He reported that in such individuals, bruxism is more severe at times of personal dilemmas or personal conflicts which trigger anxiety, tension and rage. Further, Mikami^[9] also reported that such bruxers and CMDs are more likely to turn their anger inward instead of displacing anger, hostility or rage to an object or person. Thus, because of the difficulties to evade the source of frustration and hostility and channeling such affects to the appropriate persons, objects or situations, they displace such affects in elaborated forms to persons or situations in bad dreams and nightmares. These considerations are also in line with the clinical observation that CMDs and BB sufferers in the current study were those presenting the highest scores in hostility and BB.

Findings and considerations in the current investigation are echoed at least in part by one study^[10] reporting that chronic pain sufferers are more frustrated, demonstrate greater number of somatic complaints and become more vulnerable to react with anger and hostility. Anger, hostility and frustration may be expressed at night during bad dreams and nightmares in which the dreamer or others are the recipient of aggression, hostility, anger and even violence. Daytime stressful life events may reactive anger, rage and hostility held inward in many CMDs and BB subjects with somatization. This powerful affects may be acted out at night in the form of frustration, aggression, rage and even violence during bad dreams and nightmares. These considerations are consonant with recent studies^[12] asserting that aggression, fear, anger sadness and frustration are common themes in bad dreams and nightmares.

Main self reported themes in those with bad dreams and nightmares are aggression and hostility related themes.. It may be that there is a subgroup of CMDs individuals with moderate to severe psychological and psychiatric disorders. Such individuals are those presenting with severe depression, somatization and dissociation. Because Kernberg studies^[21] defend the notion that “aggression is more blatantly observed in subjects with more severe personality or psychiatric disorders”. Thus, it makes sense to observe a subgroup of CMDs and BB subjects with higher scores in depression, somatization and anger inward self-reporting bad dreams and nightmares in which aggression and hostility themes predominate.

These considerations are strongly supported by one investigation^[22] in a subgroup of subjects presenting with severe personality disorders. Researchers reported that sleep disorders were significantly associated with increased psychotic experiences, depression, anxiety, fatigue and lower quality of life. Nightmares and circadian disruption may be more common in individuals with very severe psychiatric disorders^[22]. Further support for the aforementioned considerations comes from one investigation^[12] asserting that physical aggression, interpersonal conflict, being chased or persecuted, threat to physical integrity, anger and frustration are common themes in bad dreams and nightmares. Zadra and colleagues^[11] evaluated variety and intensity of emotions in nightmare and bad dreams in undergraduate students and reported that affects including anger and frustration, were common themes in students complaining of bad dreams and nightmares. Individuals with heightened trait hostility are those demonstrating increased reactivity to perceived daytime stressors and poor sleep^[23] probably including insomnia and nightmares. Stress is a powerful psychological and social construct known to degrade sleep quality. High level of cognitive hostility is a significant risk factor for disturbed sleep^[23].

VI. Conclusion

Even though we evaluated two relative large samples of CMDs and BB subjects using psychological tests and accepted scientific criteria for CMDs and BB, the reader should be cautious about conclusions and interpretations of the current investigation as some inconveniences of cross-sectional studies have been pointed out in hundreds of investigation. With these considerations in mind, we believe that the study was useful and fruitful as provided additional data on the relationship between CMDs, BB, hostility, depression and nightmares. However, new studies in this field are mandatory in order to provide additional data to support or add to findings reported in the current investigation.

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Table 1: Social and demographic data in subjects with CMDs, BB and self-reported history of current nightmares (n=45) and CMDs, BB and no history of current nightmares (n=45).

CMDs, BB and CMDs, BB no
Nightmares=45 Nightmares=45

AGE		
Mean	31,4	35,7*
SD	10,7	13,9
Range	14—61	15—66
GENRE		
Females	43	40
Males	2	5
Totals	45	45

*Mann-Whitney statistics (p=0,14), a statistically non significant difference. ...

Table 2: Data on depression and hostility in the CMDs, BB and self-reported nightmares subgroup (n=45) and in the CMDs, BB and no nightmares subgroup (n=45).

CMDs + BB + CMDs + BB
Nightmares=45 No Nightmares=45

BDI		
Mean	16,8	9,7**
SD	6,8	4,0
Range	6—32	3—20
HOSTILITY		
Mean	20,7	16,7***
SD	4,0	3,3
Range	12—29	11—23

** Mann-Whitney statistics (p<0,0001), a statistically very significant difference

*** Mann_Whitney statistics (p<0,0006), a statistically very significant differences.