

The role of emotional, physical and sexual abuse on depression in Craniomandibular Disorders and Bruxing behavior subjects: A multiple comparison study

Omar Franklin Molina¹ Marcus S Peixoto¹ Maria A Sobreiro¹ Almir Borges Franco² Ed Wilson César² Mauricio A Fregonesi³ Bruno Ricardo Simião³.

¹Department of Orthodontics and Orofacial Pain University of Gurupi, Gurupi-TO, Brazil.

²Department of Restorative Dentistry, University of Gurupi, Gurupi-TO, Brazil

³Department of Prosthodontics, University of Gurupi, Gurupi-TO, Brazil.

Corresponding Author: Omar Franklin Molina

Abstract

Introduction: Depression is a complex psychological construct which may represent a symptom, a disorder or a disease. Depression may be associated to some form of abuse in childhood and adolescence.

Goals: To evaluate the role of emotional, physical and sexual abuse on depression in Craniomandibular disorder subjects with abuse history and in controls with no abuse history

Methods: History of the chief complaint, clinical examination, questionnaires and self-report in subjects with craniomandibular disorders and some form of abuse (n=260) which were compared with those with no abuse (n=81). The BDI was used to gather data about depression. Widely accepted criteria for both craniomandibular disorders and bruxing behavior were utilized. Experimental subjects and controls were allocated to subgroups in such a way that a hierarchical order or a grading system of severity of abuse (more types of abuse and CMDs versus CMDs or no CMDs and no abuse) was established. The Child Abuse and Trauma Scale was used to gather data about abuse. Data were analyzed using Kruskal-Wallis statistics followed by Dunn's test.

Results: Mean ages in the CMDs + Emotional + Physical + Sexual Abuse, CMDs + Emotional + Physical abuse, CMDs + Emotional Abuse, CMDs + Physical Abuse, CMDs No Abuse and No CMDs No Abuse subgroups were about 38,6 years (SD=12,4, range 18-66); 35,2 (SD=13,5, range 17-70); 30,4 (SD=11,1, range 17-53); 36,8 (SD=15,3, range 18-75); 33,4 (SD=13,3, range 18-61); 33,0 (SD=14,2, range 17-73) years, respectively. Regarding mean age Kruskal-Wallis statistics showed that there was no statistically significant difference when the groups were compared. Mean scores in depression were about 18,9 (SD=8,6, range 4-42); 15,0 (SD=8,2, range 3-41); 15,1 (SD=7,8, range 3-41); 11,8 (SD=9,6, range 1-34); 7,3 (SD=4,4, range 0-18); 4,1 (SD=4,6, range 0-16), respectively. Kruskal-Wallis statistics demonstrated that there was a statistically and significant difference when the subgroups were compared (p<0,0001): Statistically significant differences were only present in the following pairs of groups: CMDs + Emotional + Physical + Sexual Abuse versus CMDs + Physical Abuse (p<0,01); CMDs + Emotional + Physical + Sexual Abuse versus CMDs No Abuse (p<0,001); CMDs + Emotional + Physical + Sexual Abuse versus No CMDs No Abuse subgroup (p<0,001); CMDs + Emotional + Physical Abuse versus CMDs No Abuse (p<0,001); CMDs + Emotional + Physical Abuse versus No CMDs No Abuse (p<0,001); CMDs + Emotional Abuse versus CMDs No Abuse (p<0,001); CMDs + Emotional Abuse versus No CMDs No Abuse (p<0,001); CMDs + Physical Abuse versus No CMDs No Abuse (p<0,05)..

Conclusions: Depression was more severe in the CMDs subgroups presenting with emotional, physical and sexual abuse. The intensity of depression decreased from the most dysfunctional subgroup with multiple forms of abuse to the group presenting no CMDs and no abuse.

Keywords: Craniomandibular Disorders. Emotional, Physical and Sexual Abuse. Depression.

Date of Submission: 15-07-2020

Date of Acceptance: 31-07-2020

I. Introduction

Craniomandibular Disorders (CMDs), is a collective term used to describe a set of clinical signs and symptoms including joint noises, tenderness to palpation, difficulties to perform normal jaw movements and a complaint of pain. Such signs and symptoms are observed in the masticatory muscles, temporomandibular joints (TMJs), and adjacent anatomic structures in the masticatory system, usually of musculoskeletal origin^[1]. In the last few decades, emotional, physical and sexual abuse in childhood and adolescence have been linked to

chronic orofacial pain and psychological disorders. It has been suggested that traumatic experiences in childhood and adolescence could lead to pain and depression even when a source of peripheral stimulus is absent^[2]. Traumatic childhood experiences including emotional, verbal, physical and sexual abuse in the hands of an abusive father, mother or another caregiver, may lead to facial pain, headache and concomitant psychological disorders including depression^[2]. Chronic emotional, physical and or sexual abuse in childhood or adolescence may lead to severe psychological disorders including dissociation, anger, guilt, sexual and social disorders and depression^[3]

Depression has traditionally been considered as a disease characterized by decayed mood, painful feelings, bad humor, anguish, pain attacks, tendency to isolation and lack of motivation, apathy and decay of various other psychic functions^[4]. Depression in chronic pain is a very common clinical disorder usually occurring together with somatization and drug dependence^[5]. Depression, anxiety, poor quality of life and social impairment are frequently observed in CMDs patients with pain and illness behavior. Certain subgroups of CMDs patients are characterized by clinical depression, more specifically those with severer bruxing behavior^[6]. Higher level of depression may also be observed in orofacial pain patients who report a history of abuse in childhood and adolescence^[7]

II. Material and Methods

Sample

Two hundred and sixty subjects with CMDs and abuse were referred consecutively to the Orofacial Pain Department of Gurupi University (Gurupi-Brazil) for evaluation, diagnosis and treatment over a period of 10 years. Potential patients were evaluated comprehensively including taking a history of their complaint, palpation of the masticatory muscles and joints, assessment of type of facial pain or headache, diurnal and nocturnal bruxing behavior (BB) and type of internal derangement of the temporomandibular joint. Psychological tests including the BDI, the Child Maltreatment Scale (Saunders and Becker-Lausen) the Taylor Manifest Anxiety Scale and other instruments were used to obtain additional data. Based on the set of data and using a grading system, experimental subjects (n=260) were allocated to the following subgroups: CMDs + Emotional + Physical + Sexual abuse (n=73); CMDs + Emotional + Physical Abuse (n=101); CMDs + emotional abuse (n=62) and CMDs +Physical abuse (n=24). Two controls subgroups were used in the current investigation: A CMDs and no abuse subgroup (n=51) and a non CMDs non abuse subgroup (n=30). Thus, 260 subjects were used in the experimental subgroups and 81 in the control subgroups. Experimental and control subgroups were referred in the same period of time and compared regarding age and BDI scores.

Inclusion criteria for CMDs: Presence of TMJ noises, pain on palpation of joint and masticatory muscles, difficulties to perform normal jaw movements, a complaint of muscle and joint pain and seeking active treatment for CMDs.

Inclusion Criteria for BB: Patient's report of catching himself or herself clenching or grinding the teeth at daytime or during the night, friends/relatives' report of grinding the teeth at night, patient's report of fatigue in the masticatory muscles during the day or following eating and/or speaking, awakening with facial and/or TMJ pain, headache and/or dental pain and a report of jaw locking on awakening in the morning.

Inclusion criteria for emotional, physical and / or sexual abuse: Because the Child Maltreatment Scale (CAT) uses many questions to evaluate emotional, physical and sexual abuse, emotional abuse was considered as present when a least 9/26 items were responded positively. Physical and sexual abuse were considered as present when at least 3/8 and 1/6 items were responded positively, respectively.

Exclusion criteria: Subjects and controls presenting with severe psychiatric disorders, difficulties to respond properly to questionnaires and presence of neuromuscular disorders: Parkinson's disease, other epilepsy types, speech and cognitive difficulties, were excluded from the comprehensive initial clinical evaluation.

III. Measures

Depression: The Beck Depression Inventory or BDI is a robust psychological measure used widely to assess depression for research and clinical purposes. The BDI is a 21-item questionnaire usually answered in 5-10 minutes in which questions are hierarchically organized from normal (0 score) to worst (1,2,3 scores). The instrument has excellent reliability and good correlation with depression and anxiety disorders.

Emotional, physical and sexual abuse: The Saunders and Becker-Lausen^[8] instrument is widely used to evaluate emotional, physical and sexual abuse in childhood and adolescence and provides a quantitative index of the frequency and extent of various types of negative personal experiences. This instrument uses a likert scale of 0-4 to assess frequency and intensity of abuse in which 0=never, 1=rarely, 2=sometimes, 3=very often, 4=always. In the current study responses were considered as forms of emotional, physical and/or sexual abuse. A response categorized as occasionally, very often and always was considered as a positive response of emotional, physical or sexual abuse. Emotional abuse was considered when 9 positive responses

(occasional, very often, always) were recorded in a given individual. For physical and sexual experiences, abuse was recorded as present if 3/8 and 1/6 were responded positively, respectively.

IV. Statistical analysis

Statistical analysis used in the current investigation included Kruskal-Wallis statistics (non-parametric analysis of variance).

V. Results

Mean age in the CMDs + Emotional + Physical + Sexual abuse subgroup was about 38.6 years (SD=12,4, range 18-66); 35,2 (SD=13,5, range 17-70) in the CMDs +emotional + physical abuse subgroup; 30,4, (SD=11,1, range 17-53) in the CMDs + emotional abuse subgroup; 36,8 (SD=15,3, range 18-75) in the CMDs + physical abuse subgroup; 33.4 (SD=13,3, range 18-61) in the CMDs no abuse control subgroup and 33.0 (SD=14,2, range 17-73) in the no CMDs no abuse subgroup. There was no statistically significant difference regarding age when the experimental and control subgroups were compared (Kruskal-Wallis statistics $p=0.06$). See Table 1 for further details.

Scores in depression decreased linearly from the group with more types of abuse (emotional, physical, sexual) to the less dysfunctional or with no CMDs and no abuse subgroup: CMDs + emotional + physical + Sexual abuse (mean 18,9, SD=8,6, range 4-42); CMDs + emotional + physical abuse subgroup (mean 15,0, SD=8,2, range 3-41); CMDs + emotional abuse (mean 15,1, SD=7,8, range=3-41); CMDs + physical abuse (mean 11,8, SD= 9,6, range=1-34); CMDs no abuse (mean 7,3, SD=4,4, range=0-18); no CMDs no abuse (mean 4,1, SD=4,6, range=0-16). Regarding BDI scores, Kruskal-Wallis statistics demonstrated that there was a statistically and significant difference when the experimental and control subgroups were compared ($p<0.0001$). However, statistically significant differences were observed only when the following subgroups were contrasted: CMDs +emotional + physical +sexual abuse versus CMDs + physical abuse ($p<0.01$); CMDs + emotional + physical + sexual abuse versus CMDs no abuse ($p<0,001$); CMDs + emotional + physical + sexual abuse versus No CMDs no abuse subgroup ($p<0.001$); CMDs + emotional + physical abuse versus CMDs no abuse ($p<0.001$); CMDs + emotional + physical abuse versus no CMDs no abuse ($p<0.001$); CMDs + emotional abuse versus CMDs no abuse ($p<0.001$); CMDs + emotional abuse versus no CMDs no abuse ($p<0.001$); CMDs + physical abuse versus no CMDs no abuse subgroup ($p<0.05$). See table 2, for additional details.

VI. Discussion

One goal of the current study was to evaluate depression in CMDs subjects with different types of abuse. As expected, we observed higher scores in depression in the subgroup demonstrating a history of CMDs and concomitant emotional, physical and sexual abuse. Thus, the combination of emotional, physical and sexual abuse had a stronger impact on depression when compared with the subgroup demonstrating CMDs + physical abuse or with the group characterized by the presence of CMDs and emotional abuse. Further, all CMDs subgroups demonstrating some type of abuse showed higher scores in depression when compared with the two control subgroups, that is, the CMDs no abuse and the non CMDs no abuse.

The outcome in the current investigation is substantiated by one investigation^[9] which examined more limited subgroups of CMDs subjects and reported that those demonstrating CMDs and a history of sexual abuse showed higher scores in depression as compared with subjects with no history of sexual abuse. Sexual abuse in childhood and adolescence may have a number of negative and psychological implications in adulthood including depression, dissociation and somatization^[8]. Most if not all CMDs and BB subjects presenting for evaluation and diagnosis in the current study complained of chronic facial, TMJ and headache pain. Recent evidence indicates that a sexual abuse history is more commonly reported among chronic clinical pain populations^[10]. A history of childhood trauma or abuse may be associated with depression, victimization and dissociation^[8].

In the current study, higher scores in depression were observed in those subjects with CMDs, BB and emotional, physical and sexual abuse. Their long history of trauma may also be associated with higher scores in somatization and chronic pain in multiple sites. This point of view is shared by researchers in one investigation^[5] reporting that depression in chronic pain is the most common condition and usually occurs together with somatization. Further, CMDs patients with pain and illness behavior seem to display depression, poor quality of life and social impairment^[11]. Regarding the relationship between CMDs, emotional, physical, sexual abuse and higher scores in depression, the outcome in the current research is supported at least in part by one study^[12] in CMDs patients reporting that severer depression may be present in 41% of chronic orofacial pain patients. There are reasons to believe that traumatic experiences in childhood can be found in most multifactor models related with the mechanisms, perpetuation and psychological aspects of depression^[13]. In the presence of multiple forms of trauma or repetitive and different traumatic events, the psychopathological

impact may be cumulative, resulting in overwhelming depression and anxiety^[13]. A combination of different forms of abuse in childhood and adolescence is more likely to result in severer depression and somatization^[14]

Noteworthy to mention is that the group characterized by signs and symptoms of CMDs reporting concomitant emotional, physical and sexual abuse demonstrated higher scores in depression as compared with the subgroup demonstrating CMDs and a history of physical abuse. This observation does not concur with the outcome in a similar study^[7] in orofacial pain patients reporting that CMDs patients with sexual abuse history reported less depressive symptoms as compared with CMD patients with a history of physical abuse. Characteristics of the sample and the method to record physical and sexual abuse may account for the differences observed in these investigations

In this clinical study, we found that any form of abuse when compared separately with the non CMDs no abuse subgroup, was associated with higher and statistically significant scores in depression. Consequently, this outcome is in accordance with one investigation^[15] evaluating the association between headache and psychological factors reporting that depression and anxiety were strongly correlated with each type of childhood maltreatment. Any negative psychological experience, being sexual, emotional or physical increases the risk of developing clinical or major depression in adulthood^[13]. The child or adolescent develops a clinical depression as he or she adopts the pattern of turning anger inward and is thus prone to somatic complaints including headache, CMDs and depression^[16]. Some strengths of this investigation include the large number of subjects in most groups, the assessment of a subgroup presenting with concomitant emotional, physical and sexual abuse, the use of two control subgroups, the fact that subgroups were organized from the most to the less dysfunctional in terms of abuse and presence of signs and symptoms of CMDs, and finally, the use of recognized and validated psychological instruments. On the other hand, some weaknesses have to be recognized: The fact that a small number of subjects was used in the CMDs + Physical Abuse subgroup and that emotional, physical and sexual abuse were arbitrarily accepted as present when 9\26, 3\8 and 1\6 items were positively self-reported by the experimental and control subjects. Such limitations strongly indicates the need to replicate findings in this investigation using similar samples and methods.

VII. Conclusion

In this paper we have examined depression in different subgroups of CMDs subjects with single or combined forms of psychological or physical abuse evaluating convenient clinical samples and validated psychological methods. We found that depression was more severe in the subgroup with CMDs and emotional, physical and sexual abuse. When subgroups were organized according to a hierarchical and decreasing order of abuse and CMDs and No CMDs, the severity of depression decreased from the dysfunctional subgroup with multiple forms of abuse to the subgroup with no abuse and no CMDs. Physical abuse did not increase scores in depression when the subgroup CMDs + Emotional + Physical abuse was compared with the group with CMDs and only Emotional Abuse. New studies with similar samples and methods should be undertaken to validate the findings in the current investigation.

References

- [1]. Kafas P, Dalabiras S, Handdon Z. Chronic temporomandibular joint dysfunction : an area of debate. *Hard Tissue* 2012; 10: 1-9.
- [2]. Raphael KG, Chandler HK, Ciccone DS. Is childhood abuse a risk factor for chronic pain in adulthood? *Curr Pain Headache Rep* 2004; 8: 99-110.
- [3]. Hall M, Hall J. The long-term effects of childhood sexual abuse: Counseling implications. *Vistas* 2011; 19: 1-8.
- [4]. Bernard JE. Depression: A review of its definition. *MOJ Addiction Medicine & Therapy* 2018; 5: 5-7.
- [5]. Manchikani L, Fellows B, Singh V. Understanding psychological aspects of chronic pain in the interventional pain management. *Pain Physician* 2002; 5: 57-82
- [6]. Molina OF, Dos Santos CA, Marquezan RF Cano LM, Junior FF, De Carvalho A, Hassumi LK. Changes of several psychological measures in the patients with Craniomandibular Disorders, Bruxing Behavior and Sexual Abuse History. *J Advanced Neurosci* 2015; 2: 9-15.
- [7]. Campbell LC, Riley JL, Kashicar-Zuck S, Gremillion H, Robinson ME, Somatic, affective and pain characteristics of chronic TMD patients with sexual versus physical abuse histories. *J Orofac Pain* 2000; 14: 112-19.
- [8]. Saunders B, Becker-Lausen E. The measurement of psychological maltreatment. *Child Abuse & Neglect* 1995; 19: 315-23.
- [9]. Peixoto MS, Scotta P, Carneiro A, Rank R, Fregonesi T, Fregonesi A et al. Depression, nightmares and suicide events in dreams and in the waking life in Craniomandibular disorders and bruxing behavior subjects with sexual abuse history. *JIOSR J Dent Med Sci* 2019; 18: 50-55.
- [10]. Fillingim RB, Maixner W, Sigurdsson A, Kincaid S. Sexual and physical abuse history in subjects with temporomandibular disorders: relationships to clinical variables, pain sensitivity, and psychological factors. *J Orofac Pain* 1997; 11: 48-57.
- [11]. De Oliveira AS, Evaluation of quality of life and pain in temporomandibular disorders or TMD. *Braz J Oral Sci* 2005; 4: 646-50.
- [12]. Canales G, Guarda - Nardini L, Barbosa C, Conti P, Manfredini D. Distribution of depression, somatization and pain-related impairment in patients with chronic temporomandibular disorders. *J Applied Oral Sci* 2019; 27: 1-6.
- [13]. Negele A, Kufhold J, Kallenbach L, Bohleber ML. Childhood trauma and its relation to chronic depression in adulthood. *Depression Research and Treatment* 2015; 201: 1-21.
- [14]. Subic-Wrana C, Tschan R, Swereus R, Beutel M, Wiltink J. Childhood trauma in adulthood and its relation to diagnosis and psychic complaints in patients a psychosomatic university ambulance. *Psychotherapie Psychosomatik Medizinische Psychologie* 2011; 61: 54-61.

- [15]. Tietjen GE, Brandes JL, Peterlin L, Loft A, Dater RM, Stein MR et al. Childhood maltreatment and migraine: Emotional abuse as a risk factor for headache chronification. *Headache* 2020; 50: 32-41.
- [16]. Abbass A, Lovas D, Purdy . Direct diagnosis and management of emotional factors in chronic headache patients. *Cephalalgia* 2008; 28: 1305-14.

Table 1: Social and demographic data in CMDs with different types of abuse and in two control subgroups: **CMDs + emotional+ Physical + Sexual abuse (n=73)**; **CMDs + Emotional + physical abuse (n=101)**; **CMDs + emotional abuse (n=62)**; **CMDs + physical abuse (n=24)**; **CMDs no abuse (n=51)** and **no CMDs no abuse (n=30)**.

	SUBGROUPS											
	CMDs=73		CMDs=101		CMDs=62		CMDs=24		CMDs=51		No CMDs=30	
	EA+PA+SA		EA+PA		EA		PA		No Abuse		No Abuse	
GENRE	n	%	n	%	n	%	n	%	n	%	n	%
Females	68	93,2	92	91,1	55	88,7	23	95,8	46	90,2	22	77,3
Males	5	6,8	9	8,9	7	11,3	1	4,2	5	9,8	8	26,7
Totals	73	100	101	100	62	100	24	100	51	100	30	100
AGE												
Mean	38,6		35,2		30,4		36,8		33,4		33,0*	
SD	12,4		13,5		11,1		15,3		13,3		14,2	
Range	18--66		17--70		17--53		18-75		18--61		17--73	

*Kruskal-Wallis statistics p=0,06 (a non significant difference)

Table 2: Mean scores in depression in different experimental and control subjects: **CMDs + Emotional + Physical + Sexual abuse (n=73)**; **CMDs + Emotional + Physical Abuse (n=101)**; **CMDs + Emotional abuse (n=62)**; **CMDs + Physical Abuse (n=24)**; **CMDs No Abuse (n=51)**; **no CMDs no abuse (n=30)**.

SUBGROUPS	SCORES IN DEPRESSION (BDI)			
	Means**	SD	Range	
CMDs + EA + PA + SA	18,9	8,6	4—42	
CMDs + EA + PA	15,0	8,2	3—41	
CMDs + EA	15,1	7,8	3—41	
CMDs + PA	11,8	9,6	1-34	
CMDs + No Abuse	7,3	4,4	0—18	
No CMDs No abuse	4,1	4,6	0—16	

Kruskal-Wallis non parametric ANOVA p<0,0001: **CMDs + Emotional + Physical + Sexual Abuse versus **CMDs + Physical Abuse** (p<0,01); **CMDs + Emotional + Physical + Sexual Abuse** versus **CMDs No Abuse** (p<0,001); **CMDs + Emotional + Physical + Sexual Abuse** versus **no CMDs No Abuse** (p<0,001); **CMDs + Emotional + Physical Abuse** versus **CMDs No Abuse** (p<0,001); **CMDs + Emotional + Physical Abuse** versus **No CMDs No Abuse** (p<0,001); **CMDs + Emotional Abuse** versus **CMDs No Abuse** (p<0,001); **CMDs + Emotional Abuse** versus **No CMDs No Abuse** (p<0,001); **CMDs + Physical Abuse** versus **No CMDs No Abuse** (p<0,05).

Omar Franklin Molina, et. al. "The role of emotional, physical and sexual abuse on depression in Craniomandibular Disorders and Bruxing behavior subjects: A multiple comparison study." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(7), 2020, pp. 01-05.