

Does emotional, physical and/or sexual abuse influence scores in somatization in subjects with Craniomandibular Disorders and Bruxing Behavior?

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Abstract

Introduction: It is now accepted that many temporomandibular disorder patients may suffer from somatization disorders. Somatization is described as the transformation of deep psychological conflicts into body complaints or illnesses.

Goals: Evaluate scores in somatization in craniomandibular disorders and bruxing behavior individuals with different types of abuse and test the hypothesis that somatization scores will increase in such subjects if reporting multiple types of abuse.

Methods: Clinical examination, history of the chief complaint to evaluate craniomandibular disorders, questionnaires and clinical examination for bruxing behavior, and psychological measures including the Rief and Hiller instrument for somatization and the Saunders and Becker-Lausen instrument for childhood maltreatment were utilized to evaluate 73 individuals with craniomandibular disorders, bruxing behavior, emotional, physical and sexual abuse; 101 individuals with craniomandibular disorders, bruxing behavior and emotional and physical abuse, 62 subjects with CMDs and emotional abuse, 24 subjects with craniomandibular disorders, bruxing behavior and physical abuse, 51 individuals with craniomandibular disorders and no abuse (Control) and 30 subjects with no craniomandibular disorders and no abuse (control). The Kruskal-Wallis and Dunn's test were used to evaluate significant differences when the groups were compared.

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 and No Abuse 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), respectively. There was no statistically and significant difference when age was compared one group with the other (Kruskal-Wallis statistics $p=0.06$). See Table 1 for additional details. Mean somatization scores in the aforementioned subgroups were about 14,3 (SD=6,1, range=4-28); 12,2 (SD=4,9, range=0-28); 11,4 (SD=5,3, range= 3-24); 11,2 (SD=5,6, range= 4-28); 8,2 (SD=4,9, range=1-18); 4,5 (SD=3,4, range=0-12), respectively. Kruskal-Wallis statistics ($p<0,0001$). Statistically significant differences were only observed in the subgroups as follows: CMDs + Emotional + Physical + Sexual abuse subgroup versus CMDs No Abuse subgroup ($p<0,001$); CMDs + Emotional + Physical + Sexual subgroup versus No CMDs No Abuse subgroup ($p<0,001$); CMDs + Emotional + Physical subgroup versus CMDs No Abuse ($p<0,001$); CMDs + Emotional + Physical subgroup versus No CMDs No Abuse subgroup ($p<0,001$); CMDs + Emotional subgroup versus No CMDs No Abuse subgroup ($p<0,001$); CMDs + Physical Abuse subgroup versus No CMD No Abuse subgroup ($p<0,001$), respectively.

Conclusion: Somatization scores were higher in the CMDs subgroup of CMDs + emotional + Physical + sexual abuse when compared with the two control subgroups. CMDs subjects with emotional, physical and emotional abuse did not demonstrate higher scores in somatization when compared with the CMDs with emotional + physical abuse or with only emotional or with only physical abuse; the effect of emotional + physical + sexual abuse was not cumulative in the amount of somatization when compared with only one type of abuse in CMDs subjects.

Keywords: Craniomandibular Disorders. Bruxing Behavior. Somatization. Emotional, Physical, Sexual Abuse.

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I. Introduction

Traumatic experiences sometimes labeled as emotional, physical and sexual abuse and or "psychic experiences", constitute negative life events or experiences that abruptly overwhelm individual capacity and alter the sense of safety and integrative intactness leading to anxiety and a feeling of helplessness^[1]. It has been reported that any form of continuous emotional, physical and or sexual abuse, may increase the vulnerability for the development of depression, stress and somatization disorders^[2]. Any type of emotional, physical or sexual abuse may lead to more intense stress, anxiety and a variety of physical symptoms indicating somatization^[3]. Frequent symptoms of depression, somatization, anxiety, and overuse of medication occur more frequently in those individuals reporting physical, emotional and or sexual abuse^[4].

Cranio-mandibular disorders (CMDs) constitute a well defined and clinically accepted set of signs and symptoms occurring in the masticatory muscles, temporomandibular joints (TMJs) and adjacent anatomic structures usually of musculoskeletal origin^[5]. Sign and symptoms of CMDs include joint noises, difficulties to perform normal jaw movements, tenderness to palpation of joints and muscles, a complain of pain and headache of musculoskeletal origin^[6]. Diurnal, nocturnal and or mixed bruxing behavior (BB), is a complex psychophysiological, motor and neurophysiological disorder associated with anxiety, depression and or somatization usually occurring in gradients of intensity, frequency and signs and symptoms^[7]. BB is usually defined as an oral habit, a daytime and or a nighttime motor disorder associated with gnashing, grinding or clenching the teeth which leads to many forms of trauma occurring in many components of the masticatory system^[8]. Recent evidence points to a close association between emotional and or psychological factors including somatization, stress, anxiety and BB^[9].

Somatization is nothing more than the tendency of some individuals to experience and communicate to others their psychological distress in the form of body symptoms which encourage them to seek constant medical help. Such symptoms include those like pain and fatigue, neurological alterations, musculoskeletal disturbances and disorders in multiple body systems. Symptoms usually represent a powerful and disguise defense against mental instability^[10]. The individuals with such characteristics are usually labeled as "psychosomatic" which implies the presence of physical disorders masking emotional and psychological disturbances. Somatization is also defined as the transformation of emotions into multiple signs and symptoms in the body encouraging the patient to seek medical help with many physicians^[11]. Many patients with recurrent headaches have somatization of emotions as a component of their problems. Facial pain and CMDs may also be observed in patients with somatization disorders. Even though many studies about somatization have been published in the literature, currently, there is scarcity of information about the relationship between a single type and a combination of different types of abuse in CMDs and BB individuals. Thus, this study was carried out to:

1. Evaluate scores in somatization in CMDs and BB with single and combined types of abuse;
2. Test the hypothesis that a combination of emotional, physical and sexual abuse will have a more pathological impact on somatization in a set of individuals with CMD and BB subjects.

II. Material and Methods

Sample

Two hundred and sixty subjects with CMDs, BB and some form of abuse were referred consecutively over a period of ten years to the Orofacial Pain Department at Gurupi University, School of Dental Medicine (Brazil) for evaluation, diagnosis and potential treatment.. Such patients were evaluated comprehensively for research and diagnostic purposes including taking a history of their chief complaint, palpation of the masticatory muscles and temporomandibular joints (TMJs), assessment of diurnal, nocturnal or mixed BB, and evaluation of any type of internal TMJ derangements (IJD) using appropriate diagnostic tests and description of joint pain. Headache was diagnosed when possible using the location and characteristics of the pain as main diagnostic tools. Some psychological tests including TMAS, BDI, Child Maltreatment Scale^[12], the Cook and Medley Instrument^[13] and the Rief and Hiller^[14] Questionnaire were used to gather information about some psychological characteristics of subjects in the experimental and control subgroups. Based on the set of data to gather information, experimental subjects were allocated to the subgroups as follows: CMDs + emotional + physical + sexual abuse (n=73), CMDs + emotional + physical abuse (n=101), CMDs + only emotional abuse (n=62), and CMDs + only physical abuse (n=24). Two controls subgroups were also used: Those demonstrating signs and symptoms of CMDs but without a history of abuse (n=51) and those with no CMDs and no history of abuse (=30). Experimental subjects and controls were organized in this hierarchical order to form a gradient of severity from CMDs and severer abuse to no CMDs and no abuse, assuming that somatization would decrease linearly from the most dysfunctional to the non dysfunctional subgroup. Experimental and control subjects were referred over the same period of time. Clinical examination, use of functional tests to assess type of internal derangement of the TMJ, and gathering data about psychological tests were carried out by one examiner of the Research Team (OFM).

Inclusion criteria for CMDs: Experimental subjects and controls were included in a large subgroup of CMDs and BB when they demonstrated signs and symptoms accepted widely as clinical characteristics of CMDs including a complaint of pain in the masticatory structures usually muscles and joints, joint noises, tenderness to palpation, difficulties to perform normal jaw movements and headache of musculoskeletal origin. Subjects in this large group were allocated to two subgroups: CMDs with some form of abuse and CMDs with no history of abuse. A control subgroup with no CMDs and no abuse was also included in the study. Subjects with CMDs were allocated to subgroups of those with CMDs and emotional abuse, CMDs and physical abuse, CMDs and sexual abuse and CMDs with all three types of abuse if they reported 9\23, 3\9 and 1\6 positive responses from an instrument about childhood maltreatment developed by Sanders and Becker-Lausen^[12]. The CMD + Emotional + Physical + Sexual abuse subgroup (n=73) was formed by subjects who reported three forms of abuse. There were 101 subjects in the emotional + Physical abuse subgroup, 62 subjects in the CMDs + Emotional abuse subgroup, 24 subjects in the CMDs + physical abuse subgroup, 51 subjects in the CMDs No abuse subgroup and 30 subjects in the no CMDs No Abuse subgroup.

Inclusion criteria for BB: Patient's report of catching himself or herself clenching or grinding the teeth at daytime or during the night, friends or relatives' report of grinding the teeth at night, patients' report of fatigue in the masticatory muscles during the day following talking or eating, or soon on awakening in the morning, history of awakening with pain in TMJs and or facial muscles, headache and or dental pain and a report of jaw locking on awakening in the morning. Following clinical examination and use of questionnaires subjects were classified as presenting CMDs and diurnal, nocturnal, mixed or no bruxism.

Inclusion criteria for emotional, physical and sexual abuse: The Childhood Maltreatment Instrument^[12] was used in the current study. Emotional, physical and sexual abuse were considered as present, when 9\23, 3\9 and 1\6 items of the instrument were responded positively and respectively by experimental and control subjects.

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 and cognitive and speech difficulties were excluded from the comprehensive initial clinical assessment.

III. Measures

Somatization: The Rief and Hiller questionnaire^[14] is a self-reported instrument used to gather information about signs and symptoms of multiple body complaints. 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.

Childhood and adolescence maltreatment^[12]: This instrument evaluates all forms of abuse and neglect. The instrument has 38 items including those related to emotional abuse and neglect (n=23); those items to assess physical abuse (n= 9); and those which evaluates sexual abuse (n=6).. Items in the instrument are organized following an order of frequency in which 0=never, 1=rarely, 2=occasionally, 3=often, 4= very often. In the current investigation, emotional, physical and sexual abuse were considered as present when subjects and controls responded positively to at least 9 out of 23 items related to emotional abuse or neglect, to at least 3 out of 9 items related to physical abuse, and to at least 1 out of 6 items related to sexual abuse. All subjects and controls responded to this instrument.

IV. Statistical analysis

Data were analyzed using non parametric analysis of variance (Kruskal-Wallis test), followed by Dunn post hoc analysis.

V. Results

Mean age in the CMDs + Emotional + Physical + Sexual Abuse 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 subgroup and 33,0 (SD=14,2 range=17-73), in the Non 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 additional details.

Somatization scores in the subgroups CMDs + Emotional + Physical + Sexual Abuse, CMDs + Emotional + Physical Abuse, CMDs + Emotional Abuse, CMDs + Physical Abuse, CMDs with no Abuse and Non CMDs with No Abuse were about 14,3 (SD=6,1, range= 4-28); 12,2 (SD=4,9, range=0-28); 11,4 (SD=5,3, range= 3-24); 11,2 (SD=5,6, range=4-28); 8,2 (SD=4,9, range=1-18); 4,5 (SD=3,4, range=0-12),

respectively. Kruskal-Wallis and Dunn' statistics ($p < 0,0001$). Statistically significant differences were observed only when the following subgroups were compared: 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 versus no 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 ($p < 0,001$). See Table 2, for further details.

VI. Discussion

It was found that subjects with CMDs and BB reporting emotional, physical. and or sexual abuse scored higher in somatization as compared with the two groups of CMDs No Abuse and No CMDs No Abuse. This outcome is congruent with one investigation^[15] reporting that abuse in childhood and adolescence has been associated with a number of psychological and somatic symptoms including depression, chronic pain syndromes, fibromyalgia and chronic fatigue syndrome when compared with non abused adults. Further, some psychopathological disorders including somatic symptoms and depression have a negative impact on physical functioning and are clearly associated with a history of any type of abuse in childhood and adolescence^[15]. The outcome in the current study is also substantiated by one investigation^[16] reporting that physical or sexual abuse and domestic violence in childhood are correlated with the subsequent development of chronic pain and an enormous variety of medically unexplained disorders, indicating somatization in adult life. CMDs subjects reporting only emotional abuse demonstrated higher scores in somatization when compared with the two control subgroups. Thus, this outcome is in line with one investigation^[17] indicating that there is an association between emotional factors, signs and symptoms of CMDs, parafunctional habits, myofascial pain dysfunction syndrome and somatization. In the current research, CMDs subjects with emotional, physical or sexual abuse demonstrated higher scores in somatization. A history of any type of abuse in CMDs and BB subjects could increase an individual's vulnerability to emotional distress or an individual's tendency to attend, amplify and over interpret somatic symptoms^[18]

As for emotional abuse, it has been demonstrated that there is an association between emotional factors and signs and symptoms of CMDs. Trauma, parafunctional habits, somatization and female gender can be identified as risk factors in patients with MPDS and TMDS^[17]. Additional support for the outcome in this investigation comes from another research in patients with dissociative depression and fibromyalgia, indicating that emotional abuse and neglect predicted the presence of symptoms of somatization suggesting that there is an association between childhood abuse and neglect and somatization^[19]. Further, emotional abuse may be implicated in the development of two forms of dissociation: dissociative disorders and somatization^[19]. Some headaches are considered by some as manifestations of somatization. The investigation carried out by Tietjen and colleagues^[20] indicates that there is a strong association between emotional abuse and migraine. Emotional abuse may have more lasting consequences including psychiatric sequelae, than physical or sexual abuse^[20]. Grossi and associates^[21], evaluated sexual physical and emotional abuse in a sample of TMDs individuals. Researchers reported that emotional abuse more than physical and sexual abuse was an important risk factor for the development of signs and symptoms of CMDs. In one investigation^[22], researchers reported that emotional abuse was the strongest predictor of psychological symptoms including depression as compared to any form of child maltreatment.

The literature about the role of simultaneous physical and sexual abuse in childhood and adolescence is extremely scarce. One investigation^[23] asserts that the effects of both types of abuse on women are not restricted to psychiatric illness but also include increased risk of medically unexplained disorders indicating somatization including myofascial pain syndrome and fibromyalgia. In one investigation^[24], researchers reported that sexual and physical abuse were independently associated with repeated suicide attempts, indicating depression.

Regarding only physical abuse, this form of abuse was reported more frequently among subjects with history of emotional and sexual abuse. Physical abuse including interpersonal violence in adulthood is reported more frequently among women and is directly associated with the report of multiple somatic symptoms and use of the health care system^[16]. Physical abuse in females seems to be worse than sexual abuse according to the higher presence of symptoms such as pain, anxiety and depression^[25]. One investigation^[25] in a group of patients presenting with signs and symptoms of CMDs indicated that women who reported physical abuse demonstrated higher level of pain, anxiety and depressive symptoms than those who reported only sexual abuse or no abuse. Subic - Wrana et al^[26] evaluated specific relationships of trauma types and frequencies of diagnosis in a general clinical sample and reported an association between physical abuse and somatization. Mulder and colleagues^[27] studied the relationship between childhood sexual and physical abuse and dissociation. They found that childhood physical abuse was directly related with higher scores in dissociation and somatization

In the current investigation, sexual abuse was reported more frequently in combination with emotional and physical abuse. Although not statistically significant higher scores in somatization were observed in this subset of CMDs subjects. This outcome is in accordance with one study^[16] reporting that a history of sexual abuse in childhood is usually related with unexplained and persistent physical symptoms including pain complaints like headache, pelvic pain and many other disorders in childhood. Somatization is currently considered a form of dissociative disorder. In his regard, one investigation^[17] asserts that some survivors of sexual abuse may dissociate themselves to protect themselves from experiencing the sexual abuse. The association between childhood sexual abuse and somatization observed in the current study is substantiated by one investigation^[28] reporting that childhood sexual abuse is associated with a wide range of psychosocial, psychiatric and physical health outcomes. Regarding biological mechanisms, it is known that biological factors increase the risk of psychopathology and physical illness. The pituitary- hypothalamic-adrenal axis may be stimulated leading to disease including inflammation. In one investigation^[18] in individuals with facial pain and temporomandibular disorders, abused subjects demonstrated significantly higher levels of anxiety, depression and somatic symptoms as compared with nonabused subjects. Psychological and social factors including depression and somatization are associated with signs and symptoms of CMDs indicating that they are etiological factors of signs and symptoms. Many studies have demonstrated an association between depression, somatization and mofascial pain^[29]. Molina and associates^[7] evaluated scores in depression and somatization in bruxers and CMDs individuals with sexual abuse history. Researchers reported higher scores in somatization in the subgroup reporting CMDs, BB and sexual abuse history when compared with the CMDs + BB no SA and with the group without CMDs and without BB.

Experimental subjects with CMDs, BB and three or two abuse types did not demonstrate higher scores in somatization as compared with experimental subjects with only a single type of abuse. This unexpected outcome is in clear contradiction with one investigation^[30] reporting that women who reported more severe abuse, multiple forms of abuse or multiple abusers scored significantly higher when a somatization scale was used. The outcome in the current study is not in line with a similar investigation reporting that a dose - response effect exists between multiple types of childhood and adolescence abuse and severity of abuse with magnitude of symptoms indicating somatization^[31]. One investigation reported that physical, sexual abuse and witnessing abuse of a parent had a graded negative effect on the victim in later life increasing the number of physical complaints like ischemic heart disease, cancer, skeletal fractures and liver disease^[31].

It is very likely that the frequency and intensity of one form of abuse is more determinant elevating scores in somatization than the presence of many forms of abuse. Alternatively, one form of abuse may be sufficient to induce higher scores in somatization than the sum of two or three types of abuse. In this regard, there is some evidence that sexual abuse does not necessarily produce higher scores in somatization when compared with emotional and physical abuse. Partially supporting this point of view one investigation^[25] in CMDs patients, reported that only CMDs with a history of physical abuse had higher levels of pain than those who reported only sexual abuse or no abuse. They also reported that patients with a history of sexual abuse are not significantly different from patients with no abuse. This means that contrary to what was expected, physical abuse subjects reported higher levels of pain, probably associated with greater numbers of pain sites indicating somatization and or increased sensitization.

Bruxing behavior is considered by some researchers as a psychosomatic disorder. In one investigation^[32] researchers compared frequent and non frequent bruxers and found that frequent bruxers reported many pain complaints in different anatomic areas adjacent and distant to the masticatory system indicating somatization. Such findings indicate that somatization occurs frequently in CMDs subjects. It may be that any form of abuse occurs with some frequency leading to somatization in vulnerable individuals. Psychosomatic pain is correlated with psychological and somatic factors which are in a changing interrelation, jointly responsible for the occurrence, severity, impairment and support of the disorder^[29]. The outcome in the current study is not substantiated by another investigation in subjects reporting multiple sexual, emotional and physical traumatic events. Researchers pointed that different traumatic situations can simultaneously act cumulatively on the abused subjects causing higher scores in depression and somatization^[29].

Grossi and colleagues^[21], evaluated abuse in CMDs patients, and reported that emotional abuse more than physical and sexual abuse is an important risk factor for the development of signs and symptoms of TMDs. **In one investigation**, comparing physical, emotional and sexual abuse^[33], in adult psychiatric outpatients, researchers found that the relationship between major depressive disorders and emotional abuse was stronger than the relationship between major depressive disorder and physical or sexual abuse. Thus, it is very likely that emotional rather than physical and or sexual abuse has a major impact increasing scores in somatization.

VII. Conclusion

In conclusion, this investigation evaluated a large sample of CMDs and BB subjects that were allocated to subgroups with different forms of abuse. All subgroups presenting a combination of different forms of abuse (sexual + physical + emotional) or only one form of abuse demonstrated higher scores in somatization when compared with the two reference groups. This study adds to the current knowledge about the relationship between different forms of abuse and somatization in CMDs subjects. Although this study has some strength, new studies should be carried out to investigate the role of multiple forms of abuse on somatization disorders.

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Table 1: Social and Demographic data in subjects with CMDs, BB, Emotional, Physical and Sexual Abuse (CMDs + BB + EA + PA + SA, n=73); CMDs, BB, Emotional and Physical Abuse (CMDs + BB + EA + PA, n=101); CMDs, BB, Emotional Abuse (CMDs + BB + EA, n=62); CMDs, BB and Physical Abuse (CMDs + BB + Physical Abuse, n=24); CMDs, BB, and no Abuse (CMDs + BB NA, n=51) and subjects with no CMDs and no Abuse (No CMDs no BB NA, n=30).

	CMDs + EA+PA+SA n=73		CMDs + EA+PA n=101		CMDs+ EA n=62		CMDs+ PA n=24		CMDs NA n=51		No CMDs NA n=30	
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: Means, Standard Deviation and Range in Somatization in the following subgroups: CMDs + Emotional + Physical + Sexual Abuse (CMDs + EA + PA + SA); CMDs + Emotional + Physical Abuse (CMDs + EA + PA); CMDs + Emotional Abuse (CMDs + EA); CMDs + Physical Abuse (CMDs + PA); CMDs No Abuse (CMDs NA); and No CMDs No Abuse (No CMDs NA).

Somatization Scores	CMDs subgroups with or without Abuse											
	CMDs +EA + PA + SA		CMDs + EA + PA		CMDs + EA		CMDs + PA		CMDs NA		No CMDs NA	
	n=73	n=101	n=62	n=24	n=51	n=30						
Mean	14,3	12,2	11,4	11,2	8,2	4,5*						
SD	6,1	4,9	5,3	5,6	4,9	3,4						
Range	4-28	0-28	3-24	4-28	1-18	0-12						

*Kruskal-Wallis and Dunn's statistics (p<0,0001): CMDs + EA + PA + SA subgroup versus CMDs NA subgroup (p<0,001); CMDs + EA + PA + SA subgroup versus No CMDs NA subgroup (p<0,001); CMDs + EA + PA subgroup versus CMDs NA subgroup (p<0,001); CMDs + EA + PA subgroup versus no CMDs NA subgroup (p<0,001); CMDs + EA subgroup versus No CMDs NA subgroup (p<0,001); CMDs + PA subgroup versus no CMDs NA subgroup (p<0,001), respectively.

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