

Researches on the role of psycho-emotional factors in craniomandibular dysfunction

PhD Thesis Abstract

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Since the publication of the set of diagnostic criteria for the diagnosis of craniomandibular dysfunctions (RDC/TMD; DC/TMD), many studies have been undertaken mainly for the validation of the physical diagnosis features of the first axis of these criteria. On the other hand, the widening of the areas of investigation to the second dimension of the system, the psychosomatic one, is found in fewer studies, although scientific evidence on the relationship between craniomandibular dysfunction and the psycho-emotional factors exist.

According to current data, some psychosocial factors (anxiety, depressive states, catastrophism, passive coping strategies, social isolation) are at risk for craniomandibular disorders.

The working hypothesis that we adopted in this thesis is that, within the co-morbidity in the craniomandibular dysfunctions, the psycho-emotional factors represented especially by anxiety and depression are always present and that their relationship with the dysfunction is bidirectional.

In our research, we pursued **four objectives**:

- (1) Assessing the relationship of the anxiety with signs and symptoms of craniomandibular dysfunction;
- (2) Assessing the association of depressive states with craniomandibular disorders;
- (3) Evaluation of the signs and symptoms of craniomandibular dysfunction encountered in patients under treatment for various psychopathologies;
- (4) Investigation of occlusal factor involvement in craniomandibular dysfunction in patients with depressive disorders.

Material and methods. We investigated in the four research directions, 135 subjects with and without psycho-emotional disorders. These research objectives mainly involved the analysis of the results obtained by the application of the craniomandibular dysfunction questionnaire (presented in Chapter 3 of the thesis) and of the psychiatric instruments, consecrated and validated for our country: STAI x-1 and x-2 and BDI-2. In the undertaken researches, the diagnosis of the psychiatric disorders was performed by a psychiatrist following the Manual of Diagnosis and Statistical Classification of Mental Disorders (DSM-5) published in 2016 in Romanian and the Classification of Mental Disorders and Behavior ICD-10 edition 2016 (Chapters 4 and 5). To evaluate the influence of the occlusal factor on the craniomandibular dysfunction in patients with psychotic disorders, we used a method of the modern concept of neuromuscular dental medicine, the computerized occlusion evaluation through the T-Scan III occlusal analysis and its association with the electromyographic examination of the masticatory muscles with the BioEMG II system. This approach allowed for occlusion assessment the use of two dynamic parameters currently considered to be involved in the etiology of craniomandibular dysfunctions: the occlusion time and the disclusion time (Chapter 6).

Results

Ad objective 1 (chapter 3): Regarding the applied dysfunction questionnaire, the score evaluating the psycho-emotional characteristics linearly relates to the severity of CMD. The correlation coefficient r is 0.5743, and the coefficient of determination $r^2=0.2995$. Specific signs and symptoms of CMD show a good correlation with the degree of the dysfunctional condition ($r = 0.7737$ and $r^2 = 0.5086$). The anxiety as a trait is more evident in males compared to female subjects ($p=0.0085$)

Ad objective 2 (chapter 4): Between the two lots, there is a statistically significant difference in the overall score of the scale, which determined the tendency or predisposition for the development of the craniomandibular dysfunction. The value t (13.9) is significant at $p<0.01$. To evaluate the relationship between the presence of psychiatric diagnosis and the level of bodily pain experienced, we used the calculation of the Pearson correlation coefficient between the values obtained by subjects at BDI-II and the Somatic Pain Scale. The obtained results indicated the existence of a statistically significant positive correlation at $p = 0.01$. The calculation of the Pearson correlation coefficient between the values obtained by subjects at BDI-II and the Psycho-emotional Suffering Scale indicated the existence of a statistically significant positive correlation at $p = 0.01$. The higher the score on the Depression Scale, the higher the perceived emotional distress at the subjective level.

Ad objective 3 (chapter 5): According to this data, the average CMD questionnaire score for all subjects is 8.59. Score values distribution for the depressive disorders group and the group with other psychopathologies. The calculated absolute risk reduction (ARR) is 0.196 and the number needed to treat (NNT) is 5.1. When comparing the depressive disorders group and the other psychopathologies group, we observed no significant differences as to the mean values of the CMD questionnaire score between the two groups.

Ad objective 4 (chapter 6). The mean occlusion time in the group of depressive patients (0.829 s) differs significantly from the specified average value of this parameter (0.1-0.3 s). The two-tailed p -value (Welch) is 0.0008, considered very significant ($t= - 4.711$; $df=10$). The medians of disclusion times in the patient's group (0.58 s) and those from average values (0.4-0.5 s) do not differ significantly (fig 6); the two-tailed p -value (exact) is 0.426, considered not significant ($U=43$)

Conclusions

(a) Within the limits of this investigation, the psycho-emotional factors included in the screening questionnaire appear to play a role in defining a craniomandibular dysfunctional condition. However, in this thesis the results provided by psychometric instruments are less conclusive;

(b) The results in clinical subjects indicated that a psychiatric diagnosis - in this case, the major depressive episode may be a predisposing factor for this disorder. This risk did not occur in the nonclinical group. The present study revealed the presence of moderate levels of craniomandibular disease among patients with depressive disorders;

(c) Some of the patients who suffer from a different kind of depressive disease have to be managed to prevent the development of a craniomandibular disorder. Depressive disorders do not appear as significantly higher risk factors compared to other psychopathologies;

(d) The significantly prolonged occlusion time in depressive patients with CMD in this thesis may be due not only to occlusal discrepancies but also to behavioural factors; the antidepressants may have an important role, considering some of their side effects, and this medication probably can influence the mandibular arc of closure movement by the mentioned side effects.