

Personality Characteristics and Accompanying Symptoms in Temporomandibular Joint Dysfunction, Headache, and Facial Pain

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Aims: Patients with different facial pain/headache pathologies usually complain of numerous accompanying symptoms relative to systemic dysfunctions or to the patient's personality characteristics. The purpose of this work was: (1) to determine the prevalence of accompanying symptoms in groups of patients with temporomandibular joint (TMJ) dysfunction and other types of facial pain or headache disorders, (2) to assess the patients' personality characteristics and anxiety levels, and (3) to see whether significant differences were found between the groups. **Methods:** Two hundred forty-three patients were considered. They had TMJ intracapsular disorder (TMJ, $n = 71$), tension-type headache (TH, $n = 52$), migraine (M, $n = 68$), chronic daily headache (CDH, $n = 26$), or facial pain disorder as somatoform disorder (FP, $n = 26$). The presence of 23 symptoms was assessed; the Minnesota Multiphasic Personality Inventory (MMPI) and the Spielberger State and Trait Anxiety Inventory (STAI) were administered and the relative scores were calculated. Four different MMPI clusters (depressive, conversive, emotional, coper) were also considered. Intergroup differences were assessed by Chi-square analysis, 1-way analysis of variance, Bonferroni t test, and a logistic regression model and then standardized for gender and age, taking the tension-type headache group as a common reference group. **Results:** The TMJ group had: (1) a lower prevalence of almost all symptoms; (2) significantly lower scores of several MMPI and of state anxiety; and (3) odds ratio values < 1 for all symptoms except phobias and for emotional, conversive, and depressive MMPI profiles. The FP and CDH groups had the highest prevalence of the majority of symptoms and higher MMPI and STAI scale elevations. **Conclusion:** It is concluded that some types of headache and facial pain seem to correlate with the presence of a number of accompanying symptoms and with some changes in personality. These changes are particularly relevant in patients with chronic daily headache and facial pain disorder. In contrast, patients with TMJ intracapsular disorders tended to show a low prevalence of accompanying symptoms and a normal personality profile.

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Key words: temporomandibular disorders, headache, facial pain, personality, anxiety

The taxonomic problems of temporomandibular joint (TMJ) dysfunction and other pathologies characterized by headache and facial pain are related partly to a lack of consensus of the etiologic factors and their interplay. In particular the relevance of psychologic factors is debated.¹⁻⁹

Patients with different headache/facial pain pathologies usually complain of numerous accompanying symptoms. Some of them

may relate to overall system dysfunction (eg, hormonal, vascular, neurologic), while others rather relate to the patient's personality characteristics. Thus, detection and quantification of these symptoms and assessment of the patient's personality may help to clarify better the patient's pathology.

The purpose of this study was to investigate these issues in selected groups of patients with TMJ dysfunction and other types of facial pain or headache, and in particular: (1) to determine the prevalence of the accompanying symptoms in the different groups, (2) to assess the patients' personality characteristics and anxiety levels, and (3) to determine whether there are significant differences between the groups.

Materials and Methods

Two hundred forty-three patients were enrolled in the study. There were no inclusion criteria other than consecutive admission. Patients were excluded if other pathologies or general diseases superimposed to the headache/facial pain problem were present. After history taking and clinical examination the patients were assigned to 1 of the following diagnostic groups: TMJ intracapsular disorder ($n = 71$), tension-type headache (TH, $n = 52$), migraine (M, $n = 68$), chronic daily headache (CDH, $n = 26$), or facial pain disorder as somatoform disorder (previously defined as "atypical facial pain") (FP, $n = 26$). The diagnostic criteria of the American Academy of Orofacial Pain,¹⁰ the International Headache Society,¹¹ and, for FP patients, of the American Psychiatric Association's *Diagnostic and Statistical Manual*¹² were employed. Chronic daily headache patients were considered as such when the headache lasted at least 6 days a week and had been occurring for a period of at least 6 months; moreover, the headache lasted all day or most of the day.^{13,14} Two psychometric tests, the Minnesota Multiphasic Personality Inventory (MMPI), Italian abbreviated version—with normative data calibrated with an Italian reference population¹⁵⁻¹⁷—and the Spielberger State and Trait Anxiety Inventory (STAI) were administered. In addition, a semistructured interview was conducted to assess the presence of 23 symptoms, general or psychosomatic in nature. These items, which belong to those generally investigated when taking a medical history, have been shown to have a significantly higher prevalence in pain patients compared to a normal population.¹⁸

Differences between the groups were tested for significance by Chi-square analysis, and P values

were considered significant at $P < 0.05$. One-way analysis of variance and the Bonferroni t test were used to assess differences of mean T scores of the MMPI scales (3 validation scales and 10 clinical scales) and of STAI state and trait anxiety scores in the different diagnostic groups. Since gender distribution was different in the groups and women were by far more numerous, differences between the groups were tested again for women only. Moreover, to further exclude possible confounding effects of gender and age on the variables, odds ratios and confidence intervals at 95% were further calculated in logistic regression models standardized for gender and age. For this purpose a cluster analysis was performed on the MMPI data, with the patients assigned to 4 different categories: normal (coper), conservative, depressed, or emotionally overwhelmed¹⁹ (Fig 1). Similarly, the patients were distributed into 3 STAI categories according to the STAI scores: lower than 40, between 40 and 49, or higher than 49. The TH group was taken as a common reference group, given the fact that tension-type headache is the type of head pain most frequently encountered in the general population.²⁰

Results

Table 1 reports the data relative to gender and age for all patients and the diagnostic groups. The percentage of females ranged from 77% for the TMJ group to 100% for the CDH group. The mean age was significantly lower for the TMJ and TH groups.

Table 2 shows the prevalence of accompanying symptoms in the groups. The TMJ group had a lower prevalence of almost all symptoms; this was significant for weariness, anxiety, back pain, limb pain, vertigo, and hypotension. Conversely, the FP group had a higher prevalence of the majority of symptoms, significantly for sleep disorders, paresthesias, palpitations, colitis, gastritis, and fainting.

Figure 2 gives the mean MMPI profiles. The TMJ group had a normal profile, while an elevation of several scales was found in the other groups, and in particular, in the FP and CDH groups. The TMJ group had significantly lower scores for hypochondriasis, depression, and hysteria compared to all other groups and for psychopathic deviation, paranoia, psychastenia, schizophrenia, and state anxiety (STAI 1) compared to some other groups (Table 3). Data relative to symptom prevalence and MMPI and STAI scores did not change substantially when only women were considered.

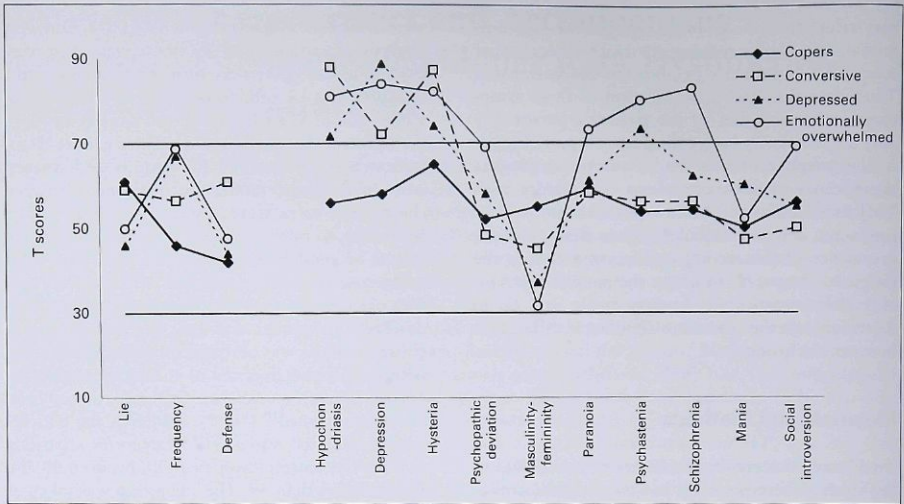


Fig 1 The 4 types of MMPI profile considered: Depressed (with elevation of the 3 scales of the neurotic triad [hypochondriasis, depression, hysteria] and of depression in particular) and of psychastenia (indicating anxiety); conversive, with "V configuration" of the neurotic triad; emotionally overwhelmed, with elevation of the scales of the neurotic triad and of others relative to psychoticism (paranoia, schizophrenia, mania); and normal (the "copers").

Table 1 Gender and Age of Patients in the Different Diagnostic Groups

Diagnostic group	Men		Women		Total	
	n	Age*	n	Age*	n	Age*
TMJ	16	32 ± 13	55	29 ± 10	71	30 ± 11
TH	5	25 ± 9	47	30 ± 10	52	29 ± 10
M	12	43 ± 11	56	38 ± 12	68	39 ± 12
FP	3	63 ± 3	23	45 ± 14	26	48 ± 14
CDH	0	—	26	41 ± 14	26	41 ± 14

*Mean ± SD.

TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache.

Figure 3 reports the odds ratio values for the symptoms considered in the diagnostic groups with respect to TH. All symptoms in the TMJ group except phobias had odds ratios < 1; *P* values were 0.01 for tiredness, anxiety, and paresthesias and 0.04 for colitis. The CDH group and the FP group had odds ratios > 1 for the majority of symptoms; however, a significant *P* level was found only for hypotension (FP) and frigidity and vaginismus (CDH).

In the TMJ group odds ratios for emotional, conversive, and depressive MMPI profiles were < 1 (Fig 4). The same was true for STAI scores higher than 50. *P* values were significant in all cases except that for the MMPI depressive profile. The same items had odds ratios < 1 for M patients and > 1 for CDH and FP patients, although not significantly so (Fig 4).

Table 2 Prevalence of Accompanying Symptoms in the Diagnostic Groups

Symptom	TMJ	TH	M	FP	CDH
Weariness	51*	75	66	77	69
Sleep disorders	34	42	49	73*	46
Mood changes	49	56	57	65	69
Anxiety	62*	83	75	100	77
Phobias	42	25	57*	42	54*
Cramps	27	27	50*	42	39
Paresthesias	27	48	43	73*	50
Palpitations	47	62	57	81*	77*
Colitis	24	42	50*	50*	35
Gastritis	24	27	34	54*	46*
Urticaria	6	6	13	12	12
Frigidity/vaginismus	13	15	18	35	50
Thermoregulatory disorder	59	65	57	73	46
Clonus	18	19	18	23	15
Back pain	45*	65	54	69	77
Limb pain	15*	29	26	46	46
Fainting	6	15	13	31*	12
Circulatory disorder	15	19	18	19	32
Vertigo	21*	35*	50	54	50
Visual disorders	23	27	44	42	35
Hypotension	42*	50	28*	69	58
Nail/hair fragility	37	46	44	62	50
Menstrual disorder	29	26	25	31	15

*Significantly different.

TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache.

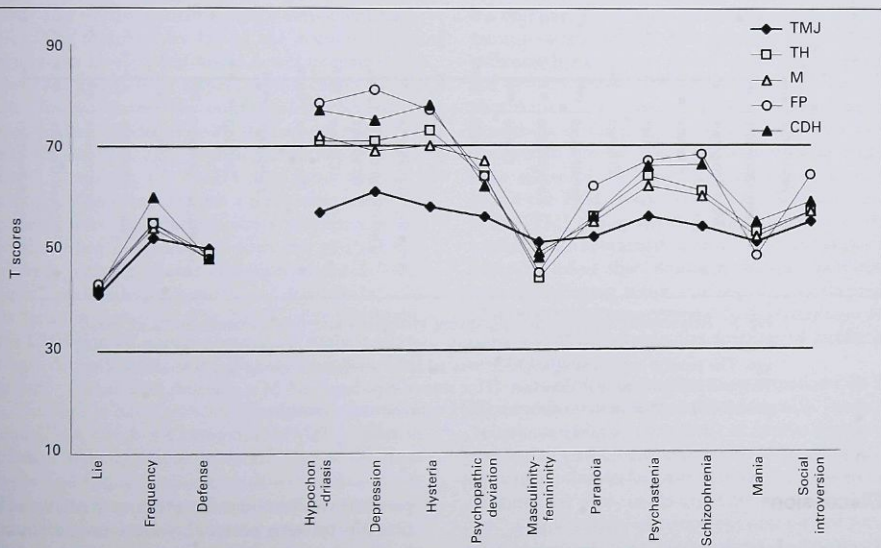
**Fig 2** Mean MMPI profiles of the diagnostic groups. The TMJ group shows a normal profile, while the other groups show elevation of a number of scales. TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache.

Table 3 Mean MMPI and STAI Values (\pm SD) of the Diagnostic Groups

Scale	TMJ	TH	M	FP	CDH	ANOVA		TMJ significantly lower vs:
						F	P	
Hypochondriasis	58.6 \pm 13.1	71.1 \pm 11.1	71.8 \pm 15.0	77.6 \pm 15.4	76.5 \pm 11.6	16.38	0.0001	All
Depression	61.4 \pm 14.1	69.5 \pm 12.6	69.3 \pm 14.1	80.8 \pm 13.3	74.6 \pm 19.9	10.24	0.0001	All
Hysteria	58.5 \pm 14.3	72.6 \pm 11.9	69.7 \pm 13.6	75.7 \pm 12.7	75.8 \pm 12.8	15.26	0.0001	All
Psychopathic deviation	55.2 \pm 13.0	63.5 \pm 12.4	57.9 \pm 12.5	64.1 \pm 15.4	61.9 \pm 9.8	4.62	0.0013	FP, TH
Masculinity-femininity	49.2 \pm 10.6	45.4 \pm 8.9	47.7 \pm 8.5	44.7 \pm 9.8	47.4 \pm 10.8	1.69	0.1522	—
Paranoia	51.0 \pm 11.7	55.5 \pm 10.6	53.9 \pm 11.1	62.0 \pm 11.6	55.2 \pm 11.5	4.80	0.0010	FP
Psychastenia	56.0 \pm 14.3	62.4 \pm 13.6	62.6 \pm 16.1	67.2 \pm 11.8	65.7 \pm 16.2	4.13	0.0030	FP, CDH
Schizophrenia	53.6 \pm 12.8	60.0 \pm 14.3	59.7 \pm 15.2	65.4 \pm 13.9	64.8 \pm 13.0	5.23	0.0005	FP, CDH
Mania	49.0 \pm 10.9	51.5 \pm 13.4	50.3 \pm 10.7	48.0 \pm 12.0	52.7 \pm 9.9	0.93	0.4443	—
Social introversion	55.1 \pm 11.2	57.3 \pm 10.1	56.7 \pm 12.7	61.7 \pm 10.7	58.8 \pm 13.0	1.74	0.1428	—
State anxiety	39.5 \pm 11.4	46.8 \pm 13.7	44.5 \pm 11.3	44.7 \pm 10.8	55.0 \pm 14.7	8.25	0.0001	CDH, TH
Trait anxiety	44.0 \pm 12.3	49.0 \pm 11.7	45.6 \pm 11.3	50.0 \pm 12.6	51.8 \pm 12.8	3.16	0.0149	—

TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache; ANOVA = analysis of variance.

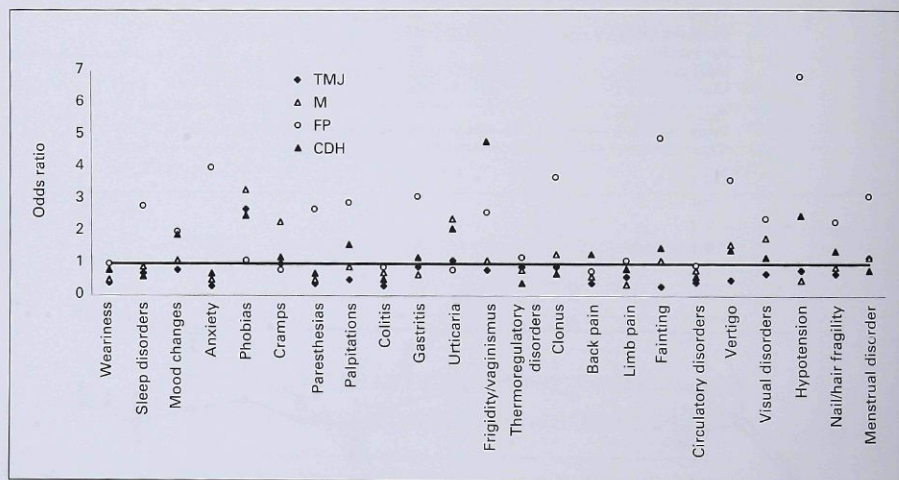


Fig 3 Relationship between accompanying symptoms and type of headache/facial pain. Odds ratios were calculated with a logistic regression model standardized for gender and age. The tension-type headache group was taken as a reference group (horizontal line = 1). TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache.

Discussion

The data at hand show that, in patients with different types of chronic headache or facial pain, a number of accompanying symptoms, mainly psychosomatic, are frequently reported, and confirm that this may reflect some general disorder or

personality alterations. In previous studies a relationship between personality changes and chronic tension-type headache, migraine, chronic daily headache, and facial pain disorder was observed.²¹⁻²⁷

A relation between TMJ dysfunction and personality changes has also been asserted.¹⁻³ Our

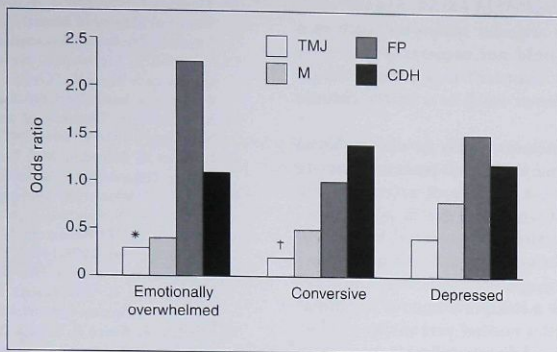


Fig 4 Odds ratios versus tension-type headache patients of the depressive, conversive, and emotional profiles in the other diagnostic groups. * $P < 0.05$, † $P < 0.01$. TMJ = TMJ intracapsular disorder; TH = tension-type headache; M = migraine; FP = facial pain disorder as somatoform disorder; CDH = chronic daily headache.

data do not confirm this assumption; rather, these patients seem to suffer from a localized disturbance with no or little impact on the general systems and on the patient's personality characteristics. The majority by far of the accompanying symptoms investigated had a lower prevalence in the TMJ group with respect to the others (Table 2). This was essentially confirmed by the regression logistic model (Fig 3). In general, the CDH and FP groups had the highest prevalence of symptoms. Moreover, the MMPI data show that psychologic alterations are not a distinctive feature of patients with TMJ intracapsular problems, while in the other diagnostic groups the profile was altered, with significant elevation of the 3 "neurotic" scales (hypochondriasis, depression, and hysteria) in particular (Fig 2 and Table 3). Again, the CDH and FP groups showed the highest elevations. Anxiety levels were also lower in the TMJ group.

The data at hand replicate those from a previous study,²⁵ in which we compared MMPI profiles in patients with headache or facial pain of different types and found significantly lower scores in the TMJ group than in the other groups. A question to consider when studying chronic pain syndromes is whether personality disturbances predispose to such syndromes in general (and to headache and facial pain in particular), or whether the pain itself causes such disturbances. In the latter case it could be that the characteristics of TMJ pain (often less

severe and less continuous than other pain pathologies) could influence the patient's personality characteristics. In the above-mentioned study²⁵ we compared our data to those from 2 control groups—healthy, pain-free subjects and patients suffering from chronic pain outside the craniofacial or neck areas—and found that in the chronic pain patients, several MMPI scores were higher than those of the pain-free subjects, but they were still within normal levels and substantially lower than those of all headache/facial pain groups except the TMJ group. This study also found that in the TMJ group the depression score was the highest but remained within normal levels. It seems therefore that, although the pain level may be a contributing factor (for instance, to the level of depression), some personality characteristics are indeed related to particular features of headache and facial pain.

A source of data conflict may sometimes lie in the tendency to give the same definition (such as "craniofacial disorders" or similar terms) to a group of pathologies characterized by chronic or recurrent craniofacial pain that also extends to the preauricular area, or to attribute to "TMJ disorder" a wide variety of symptoms that are not articular in nature. Pain in the cheek and/or in the preauricular region may well be due to pain projection from the masseter or the lateral pterygoid muscles, or it may be of psychogenic origin. Moreover, TMJ disorders may coexist with muscle

pain and/or headache.^{28,29} In other cases the presence of some minor articular symptoms (such as a light joint click) should not necessarily lead to a diagnosis of "TMJ disorder" in a patient whose real problem is different (such as a severe chronic headache).

The following conclusions may be drawn. Some types of headache and facial pain seem to correlate with the presence of a number of accompanying symptoms and with some changes in personality. These changes are particularly marked in patients with chronic daily headache and facial pain disorder. On the contrary, patients with TMJ intracapsular disorders show a low prevalence of accompanying symptoms and a normal personality profile. These patients should be considered separately from those suffering from other pathologies superimposed upon some minor articular symptoms.

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