Subtyping Patients with Temporomandibular Disorders in a Primary Health Care Setting on the Basis of the Research Diagnostic Criteria for Temporomandibular Disorders Axis II Pain-Related Disability: A Step Toward Tailored Treatment Planning?

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Aims: To use the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Axis II and additional pain-related and psychosocial variables to identify subtypes of TMD patients in a primary health care setting based on pain-related disability. **Methods:** Consecutive TMD pain patients (n = 399) seeking treatment in a primary care setting completed a multidimensional pain questionnaire. Subtyping was based on the Graded Chronic Pain Scale (GCPS), and the patients were divided into a no-disability group (0 disability points), low-disability group (1–2 disability points), and high-disability group (3–6 disability points). Psychosocial variables included RDC/TMD Axis II variables, anxiety, tension and stress, worry, catastrophizing, coping ability, general health, and other pain problems. Subtype differences were analyzed with *t* test, Wilcoxon rank-sum test, ANOVA, or Kruskal-Wallis test. A further analysis with multivariable logistic model was applied. All *P* values from pairwise comparisons were Bonferroni adjusted. **Results:** Most (61%) of the patients belonged to the no-disability group, 27% to the low-disability group, and 12% to the high-disability group. When subtypes were compared, patients in the no-disability group appeared psychosocially well-functioning, with fewer symptoms related to psychosocial distress, better ability to control pain, and fewer jaw functional limitations and other pain problems. Patients in the high-disability group reported the highest levels of symptoms of depression and somatization, sleep dysfunction, worry, and catastrophizing thoughts. The low-disability patients formed an intermediate group between the no-disability and high-disability groups. **Conclusion:** The results suggest that GCPS-related disability scoring can be used as a simple screening instrument in primary care settings to identify individuals with different, clinically relevant psychosocial subtypes. *J Oral Facial Pain Headache 2015;29:126–134. doi: 10.11607/ofph.1319*

Key words: *biopsychosocial, Graded Chronic Pain Scale, primary health care, RDC/TMD Axis II, TMD pain*

Painful temporomandibular disorders (TMD) are common reasons for seeking oral health care.[1] The prognosis of TMD is mostly favorable,[2–4] and the pain of the vast majority of patients is relieved by simple treatments.[5–7] Some patients, however, suffer from severe symptoms and persistent pain.[3,8–10] Today there is extensive evidence that psychosocial factors have a substantial impact on pain persistence as well as responsiveness to TMD treatment.[7,10–15]

To capture the multidimensional nature of TMD, a dual-axis system, the Research Diagnostic Criteria for TMD (RDC/TMD), was developed in 1992[16] and has since been translated into several languages including Finnish.[17] In this system, Axis I assigns the clinical TMD diagnoses and Axis II addresses psychological distress and psychosocial dysfunction. A constituent part of the RDC/TMD Axis II psychosocial assessment is the Graded Chronic Pain Scale (GCPS), which consists of measures for pain intensity and pain-related disability. Accordingly, TMD pain–related impairment is graded into four hierarchical classes: grade I, low intensity and no or low disability; grade II, high intensity and no or low disability;

grade III, moderately limiting disability; and grade IV, severely limiting disability.[16,17] The GCPS was originally developed for use in general population surveys and primary health care with the purpose of improving the prognostic judgments and treatment decisions of the physicians and dentists in primary health care settings by using simple methods.[18] The validity of the GCPS in TMD research has been supported by several studies showing an association between pain grade and some other indicators of pain dysfunction,[18–23] and by studies demonstrating its prognostic validity.[4,18,24] The last-mentioned studies have demonstrated that greater ratings of GCPS are a risk factor for pain chronicity,[18,24] and that for patients with low levels of impairment the natural course of disease seems favorable.[4]

The GCPS has proved useful in clinical decision-making for the management of TMD pain, as it has been used in matching levels of TMD pain-related disability with appropriate levels of treatment.[25] In randomized controlled trials (RCTs) testing the efficacy of tailoring treatments according to the level of psychosocial functioning, TMD pain patients have been divided into two groups, functional patients (ie, grade I and grade II–low, ie, patients with no disability) and dysfunctional patients (ie, grade II–high, ie, patients with low disability plus grade III and grade IV patients with high disability). Studies on functional TMD patients have suggested that these patients benefit from self-care, which gives equal or better results than usual conservative TMD treatment,[26,27] whereas dysfunctional patients seem to benefit from treatments that include a cognitive behavioral treatment component.[28,29]

Despite the obvious importance of defining TMD patient samples on psychosocial functioning and pain-related disability, the application of the RDC/TMD Axis II in clinical decision-making has so far been limited,[30] and only a few studies have used pain grading.[31] Moreover, most of the studies that have defined their samples on the basis of chronic pain severity have used patients from specialty TMD clinics.[21–23,32–36] In one such study using extended psychosocial assessments in addition to RDC/TMD Axis II diagnostics,[36] patients were grouped into three subtypes based on the level of pain-related disability (GCPS grades I and II–low, GCPS grade II–high, and GCPS grades III and IV). The classification into three subtypes appeared clinically relevant compared to the two groups used in previous treatment-tailoring studies,[26–29] as it demonstrated that patients reporting low levels of disability (grade II–high) formed an intermediate subtype with moderate levels of psychosocial impairment that was between those with no disability (grades I and II–low) who showed uncomplicated psychosocial profiles and those with moderate or severe levels of disability (grades III and IV) who showed severe levels of psychosocial impairment.

The majority of TMD patients are treated in primary health care settings or by general dental practitioners.[37,38] Therefore, screening of primary care TMD patients for pain severity and pain-related disability and associated psychological distress would help to identify specific subtypes of TMD patients and provide a framework to develop more individualized, person-level treatments, a strategy which eventually could lead to improved efficiency of health care and cost-effectiveness of the management provided. Thus, the aim of the present study was to use the RDC/TMD Axis II and additional pain-related and psychosocial variables to identify subtypes of TMD patients in a primary health care setting based on pain-related disability. The hypothesis of the study was that screening of TMD pain patients based on pain-related disability would provide clinically relevant subtypes of patients.

Materials and Methods

Study Population

The setting for this research was the unit of Oral Health Care in Vantaa Health Centre, which is part of a public, primary health care organization serving 200,000 inhabitants in the city of Vantaa, Finland. All patients aged 18 to 70 years who sought treatment for TMD pain symptoms were recruited. The inclusion criteria for this study were that the patients had experienced TMD pain in the past month according to the RDC/TMD criteria.[16,17] The study protocol was approved by the ethics committee of Turku University and by local health authorities.

During an 18-month period from June 2010, all patients contacting the Oral Health Care unit because of oral or facial pain were screened for possible TMD pain by use of two questions regarding *(1)* pain in the temples, face, temporomandibular joints or jaws, and *(2)* pain on opening the mouth wide or on chewing. These two questions have been shown to have high sensitivity and specificity to screen for TMD-related pain.[39] One dentist (UK) with long-time experience in treating patients with TMD pain examined patients who had answered these questions affirmatively to confirm the TMD diagnosis. Before inclusion in the study, patients gave their written informed consent. Exclusion criteria included TMD pain conditions related to acute trauma or rheumatoid or other inflammatory arthritis and any physical or mental condition that would interfere with the ability to complete the study questionnaire. Eleven of the total of 411 eligible patients refused to participate, and one was excluded because of no pain during the month preceding the initial visit to assess the TMD Axis I diagnosis.

Questionnaire

At the initial visit, after the confirmation of the TMD diagnosis, participants completed a comprehensive multidimensional pain questionnaire including the following items from the Finnish version of the RDC/TMD questionnaire (www.rdc-tmdinternational.org; RDC/TMD_FIN)[17]:

1. RDC/TMD Axis II GCPS scores: characteristic pain intensity (CPI) and disability points based on disability score and disability days
2. Time since onset of the facial pain
3. Pain character (constant or fluctuating pain or only one-time pain)
4. Days in pain in the prior 6 months[13]
5. Functional jaw limitations according to the Jaw Function checklist (range 0–11)
6. RDC/TMD Axis II depression (20 questions, five-point Likert scale)
7. RDC/TMD Axis II somatization scale scores with pain items (12 questions, five-point Likert scale)
8. RDC/TMD Axis II somatization scale scores without pain items (7 questions, five-point Likert scale) based on the Symptom Checklist-90 Revised (SCL-90-R)

Additional psychosocial assessments included the following items:

a. Sleep dysfunction scores assessed by calculating the average score of the three questions of the SCL-90-R measuring sleep disturbance (difficulty falling asleep, restless sleep, and early morning awakening), five-point Likert scale
b. Anxiety, based on a numeric rating scale (NRS scale, range 0–10 from absolutely calm to as anxious as I've ever felt)[40]
c. Pain-related worry (NRS scale, range 0–10 from not at all worried to extremely worried)[13]
d. Perceived tension and stress (NRS scale, range 0–10 from absolutely relaxed to as tense as I've ever felt)[40]
e. Ruminative thoughts from the Pain Catastrophizing Scale (four questions, five-point Likert scale)[41]
f. Patients' estimate about the risk of the pain becoming persistent (NRS scale, range 0–10 from no risk to very large risk)[40]
g. Coping questions derived from the Coping Strategies Questionnaire, measuring ability to control pain (seven-point Likert scale)[42]
h. The ability to decrease pain (seven-point Likert scale)[42]
i. In addition, self-rated health status (five-point Likert scale, from excellent to poor)
j. The number of days during the last 6 months the patient had been on sick leave because of the TMD-related pain
k. The number of visits to doctors/dentists because of TMD pain during the same time period
l. The number of other pain conditions (head, neck, back, stomach, hands, feet)

Procedures

The patients were subdivided into three groups based on the GCPS interference score, in accordance with the results of a prior study,[36] as follows: *(1)* no-disability group, ie, grades I and II patients with no disability points, *(2)* low-disability group, ie, grades I and II patients with 1 to 2 disability points, and *(3)* high-disability group, ie, grades III and IV patients with 3 to 6 disability points.

Statistical Methods

All continuous variables under interest were examined with the Shapiro-Wilk test of normality. Based on the test results, either *t* test or Wilcoxon rank-sum (Mann-Whitney *U*) test was used with dichotomic explanatory variables. For the explanatory variables with more than two levels, either ANOVA or Kruskal-Wallis test was performed. All *P* values yielded by the pairwise comparisons were adjusted with Bonferroni correction. Relations of categorical variables were determined with Pearson chi-square test. While the distributions of most of the variables were skewed, median and interquartile range (IQR) were used as location and scale measures. To assess the impact of different psychosocial variables on TMD subtyping results, a multivariable logistic model with cumulative logit link function was used. Results are expressed using odds ratios (OR) with their 95% confidence intervals (CI). All analyses were performed with SAS System for Windows, version 9.3. *P* values less than .05 were considered statistically significant.

Results

Demographics

The mean age of the 399 patients was 40.5 years (SD 12.7), and the majority (83%) were women. From the patients, 66% were married or cohabiting and 34% single. Ten percent of the patients had a basic education, 75% an intermediate level of education, and 15% a university education. Seventy-eight percent of the patients were working or studying, 3% were unemployed, 9% were on sick leave, and 10% were retired. There were no significant differences between the GCPS groups except for the working status; the ratio of those presently at work vs those on sick leave differed significantly between the no-

Table 1 TMD Pain and Jaw Functional Limitations: Group Differences Among TMD Patient Subtypes with No, Low, or High Disability

		Median (IQR)				Group differences (*P*)		
Pain data	n	All	No disability	Low disability	High disability	No vs Low disability	No vs High disability	Low vs High disability
Pain interference (0–10)								
Daily activities	399	3.0 (1.0–5.0)	1.0 (0.0–2.0)	5.0 (4.0–6.0)	8.0 (7.0–9.0)	< .0001	< .0001	< .0001
Social activities	399	1.0 (0.0–4.0)	0.0 (0.0–1.0)	4.0 (3.0–5.0)	8.0 (6.5–9.0)	< .0001	< .0001	< .0001
Work/housework	399	2.0 (0.0–4.0)	0.0 (0.0–1.0)	4.0 (3.0–6.0)	8.0 (7.0–9.0)	< .0001	< .0001	< .0001
Disability points (0–6)	399	0.0 (0.0–1.0)	0.0 (0.0–0.0)	1.0 (1.0–.2.0)	4.0 (3.0–5.0)	< .0001	< .0001	< .0001
CPI scores (0–10)	399	5.0 (3.3–6.7)	3.7 (2.7–5.3)	6.0 (5.0–7.3)	7.7 (6.0–8.3)	< .0001	< .0001	< .0001
Pain duration (y)	399	3.0 (1.0–10.0)	3.0 (1.0–10.0)	4.0 (1.3–10.0)	3.5 (1.0–14.0)	.3909	.5370	1.0000
Pain days (0–180)	235	45.0 (15.0–160.0)	30.0 (13.0–90.0)	80.0 (20.0–180.0)	95.0 (20.0–180.0)	.0166	.0317	1.0000
Jaw functional limitations	398	2.0 (0.0–3.0)	2.0 (0.0–3.0)	3.0 (1.0–4.0)	2.0 (0.0–5.0)	.0026	.0429	1.0000

IQR = interquartile range; CPI = characteristic pain intensity.

and high-disability groups (82% vs 5% and 61% vs 24%, respectively) ($P = .0002$).

GCPS Subtypes

Of the 399 patients, 242 (61%) belonged to the no-disability group, 108 (27%) to the low-disability group, and 49 (12%) to the high-disability group. All GCPS interference ratings and CPI scores increased significantly from the no-disability group through the low-disability group to the high-disability group (Table 1).

Pain History and Characteristics

The median duration of TMD pain was 3.0 years (IQR 1.0–10.0). There were no significant differences between the GCPS groups in pain chronicity (Table 1). The number of days in pain increased from the no-disability group through the low-disability group to the high-disability group, with significant differences between the no-disability and high-disability groups and between the no-disability and low-disability groups (Table 1).

Constant pain was reported by 27% of the patients, while 68% of the participants reported fluctuating pain and 5% stated having experienced pain only once. The occurrence of constant pain was found to differ significantly between GCPS groups ($P < .0001$); it was more commonly experienced by patients in the low- (33%) and high- (51%) disability groups compared to patients in the no-disability group (20%).

Jaw Functional Limitations

Patients in the low-disability group and those in the high-disability group experienced significantly more limitations compared to patients in the no-disability group (Table 1).

Psychological Variables

Overall, depression and somatization symptoms increased from the no-disability group through the low-disability group to the high-disability group and differed significantly between all groups (Table 2). Sleep dysfunction scores were statistically significantly higher for the high-disability group compared to the no-disability group, as well as for the high-disability group compared to the low-disability group (Table 2).

Anxiety and pain-related worry increased from the no-disability group through the low-disability group to the high-disability group, with significant differences between the no-disability and the low-disability groups and between the no- and high-disability groups. In addition, in regard to pain-related worry, there was a significant difference also between patients in the low-disability and the high-disability groups. Patients in the high- and the low-disability groups scored significantly higher on tension and stress compared to patients in the no-disability group. Catastrophizing (ruminative thoughts) was significantly more common among patients in the high-disability group compared to those in the no- or low-disability groups. Furthermore, patients in the high-disability group estimated the risk of their pain becoming persistent significantly higher than patients in the no-disability group (Table 2).

Patients in the no-disability group reported significantly better ability to control their pain than patients in the low- and high-disability groups. There was also a significant difference between the patients in the no-disability group and low-disability group in their ability to decrease pain (Table 2).

Table 2 Psychological Variables: Group Differences Among TMD Patient Subtypes with No, Low, 0r High Disability

	Median (IQR)				Group differences (*P*)		
Psychological variable	All	No disability	Low disability	High disability	No vs Low disability	No vs High disability	Low vs High disability
SCL-90-R depression scale scores	0.6 (0.4–1.2)	0.5 (0.3–0.9)	0.7 (0.4–1.3)	1.2 (0.8–1.8)	.0008	<.0001	.0142
SCL-90-R somatization scale scores							
With pain items	1.0 (0.6–1.5)	0.8 (0.5–1.2)	1.2 (0.8–1.8)	1.7 (1.2–2.3)	< .0001	< .0001	.0033
Without pain items	0.9 (0.3–1.3)	0.6 (0.3–1.0)	1.0 (0.6–1.4)	1.4 (0.9–2.0)	< .0001	< .0001	.0106
SCL-90-R sleep dysfunction scores	1.0 (0.3–2.0)	1.0 (0.3–1.7)	1.0 (0.7–2.0)	2.0 (1.0–2.7)	.0829	.0001	.0351
Anxiety	1.0 (0.0–3.0)	1.0 (0.0–2.0)	2.0 (0.5–5.0)	3.0 (1.0–6.0)	.0013	< .0001	.0563
Pain-related worry	5.0 (2.0–7.0)	3.0 (1.0–5.0)	6.0 (4.0–8.0)	8.0 (8.0–10.0)	< .0001	< .0001	< .0001
Tension and stress	3.0 (1.0–6.0)	2.0 (1.0–4.0)	4.0 (2.0–7.0)	6.0 (2.0–8.0)	< .0001	< .0001	.1628
Catastrophizing (ruminative thoughts)	2.0 (1.5–2.5)	1.8 (1.3–2.3)	2.0 (1.5–2.5)	2.6 (2.3–3.1)	.4933	< .0001	< .0001
Patient-perceived risk of chronicity	7.0 (5.0–9.0)	7.0 (4.0–9.0)	7.0 (5.0–9.0)	8.0 (6.0–10.0)	.4840	.0482	.5892
Coping with pain							
Ability to control pain	4.0 (3.0–5.0)	5.0 (4.0–5.0)	4.0 (3.0–5.0)	4.0 (2.0–5.0)	< .0001	< .0001	.8837
Ability to decrease pain	4.0 (3.0–5.0)	4.0 (3.0–5.0)	3.0 (3.0–4.0)	3.0 (2.0–4.0)	.0020	.0508	1.0000

IQR = interquartile range; SCL-90-R = Symptom Checklist-90 Revised.

Table 3 The impact of Psychosocial Variables on TMD Subtyping Results Based on Multivariable Logistic Regression

Psychological variable	n	OR	95% CI	*P*
SCL-90-R depression scale scores	399	0.83	0.37–1.87	.6553
SCL-90-R somatization scale scores				
With pain items	399	9.14	2.46–33.87	.0009
Without pain items	399	0.37	0.12–1.14	.0845
SCL-90-R sleep dysfunction scores	399	1.13	0.80–1.59	.4925
Anxiety	399	1.03	0.86–1.24	.7343
Pain-related worry	399	1.52	1.35–1.71	< .0001
Tension and stress	399	1.04	0.87–1.23	.6760
Catastrophizing (ruminative thoughts)	273	0.98	0.68–1.40	.9032
Patient-perceived risk of chronicity	289	0.96	0.86–1.06	.3959
Coping with pain				
Ability to control pain	396	0.65	0.51–0.84	.0009
Ability to decrease pain	399	1.35	1.06–1.73	.0168

OR = odds ratio; CI = confidence interval; SCL-90-R = Symptom Checklist-90 Revised.

Analyses based on multivariable logistic regression revealed overall significance for somatization (with pain items), pain-related worry, ability to control pain, and ability to decrease pain (Table 3). The risk to belong to higher-disability groups vs lower-disability groups was greater for patients reporting more somatization symptoms or pain-related worry. Patients in lower-disability groups reported significantly better ability to control pain and to decrease pain than patients in higher-disability groups.

Additional Assessment Variables

Patients' ratings of their general health were higher (ie, general health was rated poorer) in the high-disability group (median 3.0, IQR 3.0–4.0) compared to the no-disability group (median 2.0, IQR 2.0–3.0) (*P* = .0001), and to the low-disability group (median 3.0, IQR 2.0–3.0) (*P* = .0076).

The number of physician or dentist visits for facial pain in the past 6 months increased from the no-disability group (median 3.0, IQR 2.0–4.0) through the

low-disability group (median 3.5, IQR 2.0–5.0) to the high-disability group (median 6.0, IQR 4.5–10.5). The difference was significant between the no- and the high-disability groups (P = .0001) and between the low- and the high-disability groups (P = .0031).

Patients in the no-disability group reported suffering from fewer other pain problems (median 4.0, IQR 3.0–5.0) than patients in the low-disability group (median 4.0, IQR 4.0–5.0) (P = .0006) and those in the high-disability group (median 5.0, IQR 3.0–7.0) (P = .0007).

Discussion

The results of this study confirmed the study hypothesis in showing that screening TMD pain patients based on pain-related disability resulted in three distinct and clinically relevant subtypes of primary health care TMD pain patients. The vast majority (61%) of patients reported no pain-related disability in GCPS scoring, ie, they belonged to the no-disability group in the present study. Compared to patients belonging to the low-disability group (27% of the participants) and to the high-disability group (12%), patients in the no-disability group appeared psychosocially well-functioning; they reported significantly fewer symptoms related to psychosocial distress, estimated their ability to control their pain as better, suffered from fewer jaw functional limitations, and reported fewer other pain problems than patients in the other two groups. They also reported a lower number of pain days and suffered less frequently from constant pain compared to the other patients. On the contrary, patients in the high-disability group were those reporting the highest levels of symptoms of depression and somatization, sleep dysfunction, pain-related worry, and catastrophizing/ruminative thoughts. The low-disability group formed an intermediate group between those patients belonging to the no-disability group and those in the high-disability group across most variables studied.

Methodological Considerations

To the authors' knowledge, this is the first study to examine RDC/TMD GCPS subtypes in relation to other measures of psychosocial functioning or pain characteristics of patients in a primary health care setting seeking treatment for their TMD pain on their own initiative. While most studies using RDC/TMD Axis II diagnostics have studied patient populations in TMD specialty or tertiary care clinics, the present results widen the perspective of what constitutes a typical TMD patient population. Due to the study setting, the results of the present study can most likely be extrapolated to any general dental TMD population.

Consistent with prior TMD patient population findings, women predominated (83%) and the mean age of the patients was around 40 years.[21,22,43–45] There were no significant differences between patients in the no-, low-, or high-disability groups in terms of age, gender, marital status, and education level, except for their working status: patients in the high-disability group were significantly more often on sick leave than patients in the no-disability group. The number of unemployed has also been reported to be high among high-disability patients.[18,36] In regard to age and gender, the findings were similar to those of some other studies.[23,36] However, both female[34,46] and male[33] predominance among grades III-IV patients has been reported.

The focus of the present study was on the RDC/TMD Axis II measures and other psychosocial aspects of TMD pain. This was because the assessment of psychosocial factors has been shown to be useful in planning treatments and in predicting treatment outcome.[7] Furthermore, several studies using RDC/TMD diagnostics have demonstrated a poor correlation between GCPS and Axis I diagnostics, implying the insufficiency of Axis I diagnostics as the basis for individualized, tailored treatment.[23,35,43] To broaden the assessment of the baseline psychosocial status of the TMD patients, some new domains, all known as potential risk factors for chronic pain, were used in addition to RDC/TMD Axis II measures in the present study. All measures used in the study to assess psychosocial functioning have been validated and tested in earlier studies.[12,13,30,47] Some of these new domains, eg, anxiety and sleep dysfunction, are also incorporated into the Axis II diagnostics of the newly published Diagnostic Criteria for TMD (DC/TMD).[48] From the psychosocial variables assessed in this study, increased somatization and pain-related worry and decreased ability to control and decrease pain seemed to especially increase the probability of higher disability based on logistic regression; they can thus be considered important variables as part of the Axis II assessments of the psychosocial status.

In order to enhance their cooperation and motivation, patients completed the questionnaire at chairside, giving them the opportunity to ask about problems concerning the questions when needed. This arrangement yielded reliable results in that the number of missing data remained very low.

GCPS and Psychosocial Variables

The amount of highly disabled or dysfunctional patients has varied in different studies. The reported amount of Grade III-IV patients ranges from 4%[33] to 26%,[23] the varying figures reflecting probably differences in patient samples but also variations such as pathways of patient referral and possible cultural differences in treatment-seeking behavior. Only a

minority (12%) of the primary care TMD patients in this study scored high disability, whereas the large number of patients with no disability indicated that the vast majority of primary care TMD patients can cope with their TMD pain.

The present study used a similar subtyping of GCPS groups into three subtypes as was used in a previous investigation by the authors on tertiary clinic TMD patients,[36] with one exception: Patients in grade I were subdivided, like those in grade II, into two groups; those with no disability points were analyzed in the no-disability group, whereas those reporting low levels of disability were analyzed in the low-disability group. This was because in the authors' earlier study,[36] the analysis of all patients reporting low pain intensity and 0 to 2 disability points as one group showed a tendency toward a broad data distribution in psychosocial screening measures. In the case of those psychosocial variables that were common to both studies (depression, somatization, pain-related worry, coping ability, general health, and sleep dysfunction), the intergroup differences found between the three subtypes were similar in these two studies, ie, the higher the reported level of disability, the more psychosocially distressed the patients. However, the larger sample size in the present study yielded more statistically significant intergroup differences than was found in the previous study, especially between patients reporting no disability and those reporting low disability, with all differences in the same direction as discussed above. The proportion of psychosocially uncomplicated patients was smaller (44%), and the proportions of patients with moderately (33%) or severely compromised psychosocial profiles (22%) were greater in the tertiary clinic TMD patient sample compared to the corresponding figures of primary care TMD patients in the present study (61%, 27%, and 12%, respectively). This indicates, as might be expected, that the psychosocial impact of TMD pain is on average less pronounced in primary health care.

The results of the present study are also in line with other earlier studies exploring the relationship between GCPS and psychosocial and pain variables; patients with higher levels of disability have been shown to score higher on depression[18,21,23,32] and somatization,[18,21–23,32] and to show more jaw functional limitations.[23] They also report more intense pain[18,23] and more pain days in the prior 6 months.[18] In addition, patients with higher levels of disability have been shown to report more other pain problems,[32] to experience poorer general health,[18] and to use more health care services[18] than patients with lower levels of disability, which is also in accordance with the findings in the present study. Comorbid pain conditions especially have received increasing attention in recent TMD pain research, since by increasing the burden on the individual and on the central nervous system they are known to increase the likelihood of poor treatment response.[7,49,50]

In addition to TMD, GCPS has been applied to assess psychosocial disability in a wide range of other chronic pain conditions. Like TMD patients, chronic pain patients in general show differences in pain characteristics and psychosocial impairment from one GCPS grade to the next, so that the higher grades have been consistently associated with increased psychological distress and overall psychosocial impairment.[18,19]

Chronicity of TMD Pain

In the present study, the time since the onset of TMD pain was remarkably long (median 3.0 years). The duration of the pain was, however, similar to that reported in another study on primary health care TMD patients,[18] but longer than that generally reported for cohorts of patients in secondary or tertiary TMD clinics.[21,23,34,51] The authors cannot offer any direct explanation for these apparently contradictory findings, except for the possible influence of cultural factors on the expression of TMD pain and treatment-seeking behavior.[21,51,52] The patients' answers in the RDC/TMD Axis II questionnaire to the question about patient history ("How many years ago did your facial pain begin for the first time?") may also not directly reflect the chronicity of the pain due to the fluctuating nature of TMD pain.[3] Recency of onset of pain was not related to GCPS in the present study, which is in accordance with earlier findings,[18,23,36] although the study by Manfredini et al[21] reported a significant association between pain lasting for more than 6 months and grade IV pain-related disability. The appropriateness of the very definition of chronic pain when based solely on temporal criterion has been questioned. This approach does not account for the multidimensionality of chronic pain because it ignores other inherent components such as the presence of affective and cognitive distress.[13,31,53] Furthermore, the fact that most TMD patients, even those who by definition suffer from chronic pain, improve by simple nonspecific therapies argues against the appropriateness of the time-based approach to chronic TMD pain, which is far more complex.[31,53]

Clinical Implications

The present study has demonstrated that differences exist between different GCPS subtypes in terms of a wide variety of psychosocial and pain-related variables. The results suggest that GCPS-related disability scoring can be used as a simple screening instrument in primary health care settings to identify individuals with different clinically relevant psychosocial profiles. Awareness of these differences may be of help in the planning of individualized treatment.

The main focus when using RDC/Axis II assessments in TMD has been on screening for the risk of disease progression and poor treatment response, ie, on identifying the most psychosocially distressed, dysfunctional patients.[7,30] Multimodal treatment programs to address the complexity of the condition in these patients have been developed with promising results.[11,26,29,54] The remaining patients, ie, the vast majority, are considered to benefit from usual, conservative TMD therapy emphasizing patient education.[6,7] Some attention has, however, been paid to the possibility that patients at the other end of the spectrum regarding the psychosocial impact of TMD pain, ie, functional patients, would be helped by offering them in-depth education programs. There is preliminary evidence from RCTs that independent of the physical diagnosis, a carefully conducted patient-education program for functional patients is enough to provide good and long-lasting treatment effects.[25–27] When these various treatment-related implications of Axis II assessments are hypothetically applied to clinical decision-making in primary care settings, a vast majority of patients, about 60% according to the present results, would be candidates for programs with an emphasis on patient education. Around 12% would need a further comprehensive assessment and possible multimodal treatment, a task probably best accomplished by multidisciplinary teams in TMD specialty clinics. Even though the present cross-sectional study does not provide direct evidence supporting the hypothesis that individualized treatment planning yields successful treatment results, the results definitively call for longitudinal studies to test the hypothesis further. So far all studies on tailored treatments have been undertaken in secondary or tertiary clinics,[25] but further research is needed to confirm the applicability and efficiency of the tailored treatment programs in primary care settings, where most TMD patients are treated. It also needs to be borne in mind that in the clinic, treatment decisions at the individual level should always consider factors related to the physical condition as well.

To conclude, based on the results of this study, screening primary care TMD patients for pain-related disability is easily accomplished, clinically relevant, and could possibly provide one step toward treatment planning individualized to each patient.

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