INFLUENCE OF OROFACIAL PAIN AND PSYCHOLOGICAL FACTORS ON SLEEP QUALITY

ALI ALATTAR

Supervisor
Per Alstergren

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Malmö University
Faculty of Odontology (Orofacial Pain Unit)
205 06 Malmö
ABSTRACT

Aim
Investigate the influence of chronic orofacial pain and psychological factors on sleep quality in patients with myalgia of the masticatory muscles.

Material and methods
This retrospective study included 37 patients (6 men, 31 women, mean age: 49 years) with masticatory muscle myalgia. Sleep quality (Pittsburgh Sleep Quality Index), pain intensity and pain-related disability (Graded Chronic Pain Scale), depression (Patient Health Questionnaire-9), anxiety (General Anxiety Disorder-7), stress (Perceived Stress Scale-10) and catastrophizing (Patient Catastrophizing Scale) were assessed by questionnaires. The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) were used to identify patients with myalgia.

Results
75% of the patients reported poor sleep quality, 73% reported at least mild depression degree, 54% reported at least mild degree of anxiety, 59% reported at least a moderate stress level and 38% reported a clinically relevant degree of catastrophizing. Impaired sleep quality was related to degree of depression ($r_s = 0.45$, $n = 37$, $p = 0.008$), anxiety ($r_s = 0.46$, $n = 37$, $p = 0.007$), stress ($r_s = 0.43$, $n = 37$, $p = 0.014$) and catastrophizing ($r_s = 0.37$, $n = 37$, $p = 0.034$). Multivariate logistic regression showed that characteristic pain intensity, degree of pain-related disability, depression, anxiety, stress, catastrophizing and number of masticatory muscle sites with referred pain significantly explained poor sleep quality ($p = 0.031$).

Conclusion
Sleep quality in patients with masticatory myalgia is influenced by chronic pain intensity and related disability, number of masticatory muscle sites with referred pain as well as depression, anxiety, stress and catastrophizing.
PÅVERKAN AV OROFACIAL SMÄRTA OCH PSYKOLOGISKA FAKTORER PÅ SÖMNKVALITET

ALI ALATTAR

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Per Alstergren

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Malmö högskola
Odontologiska fakulteten (Orofaciala smärtenheten)
205 06 Malmö
**Abstrakt**

**Syfte**
Undersöka påverkan av kronisk orofacial smärta och psykologiska faktorer på sömnkvalitet vid käkmuskelmyalgi.

**Material och metoder**
Denna retrospektiva studie omfattade 37 patienter (6 män, 31 kvinnor, medelålder: 49 år) med käkmuskelmyalgi. Sömnkvalitet (Pittsburgh Sleep Quality Index), smärtintensitet och smärtrelaterad funktionsnedsättning (Graded Chronic Pain Scale), depression (Patient Health Questionnaire-9), ångest (General Anxiety Disorder-7), stress (Perceived Stress Scale-10) och katastrofiering (Patient Catastrophizing Scale) undersöktes med varierade formulär. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) användes för att identifiera patienter med myalgi i käkmuskulatur.

**Resultat**
75% av patienterna rapporterade dålig sömnkvalitet, 73% rapporterade minst mild depressionsgrad, 54% rapporterade minst mild ångest, 59% rapporterade måttlig stressnivå och 38% rapporterade kliniskt relevant katastrofiering. Försämrad sömnkvalitet var relaterad till depression ($r_s = 0.45$, $n = 37$, $p = 0.008$) ångest ($r_s = 0.46$, $n = 37$, $p = 0.007$), stress ($r_s = 0.43$, $n = 37$, $p = 0.014$) och katastrofiering ($r_s = 0.37$, $n = 37$, $p = 0.034$). Multivariat logistisk regression visade att smärtintensitet, smärtrelaterad funktionsnedsättning, depression, ångest, stress, katastrofiering och antal käkmuskler med refererad palpationssmärta förklarade dålig sömnkvalitet signifikant ($p = 0.031$).

**Konklusion**
Sömnkvaliteten hos patienter med käkmuskelmyalgi påverkas i hög grad av kronisk smärtintensitet, smärtrelaterad funktionsnedsättning, antal käkmuskler med refererad palpationssmärta och depression samt ångest, stress och katastrofiering.
**Introduction**

*Chronic orofacial pain*

**Pain**

International Association for the Study of Pain (IASP 2011) define pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The experience of pain is thus entirely subjective, which means that pain is what the individual is experiencing as pain. The definition also implies that pain can occur without obvious tissue damage. Examples include tension-type headache and atypical odontalgia (1,2) as well as many other types of chronic pain (3).

**Acute and chronic pain**

Acute pain has a crucial biological value as a warning and attention system for the organism. In some individuals, acute pain turns into chronic pain. The mechanisms behind development of chronic pain are far from known (3). However, a number of risk factors or etiological factors for development of chronic orofacial pain have been identified, such as female gender (higher prevalence in women (4,5)), stress, depression (6), anxiety, chronic widespread pain (7), smoking (8), sleep disturbance (9) and previous episodes of pain (3).

Chronic pain should be considered and treated as a disease in itself. In chronic pain, the central pain modulation is disturbed, for example by neuroplastic changes in the brain’s affective and cognitive centers. There are three types of centers in the brain that modulates the experience of pain: the nociceptive/somatosensory system (provides information about pain localization, pain intensity, pain character etc.), affective centers (depression, anxiety, fear) and cognitive centers (knowledge, expectations, previous experience, context, etc.). In chronic pain, the activity in the affective and cognitive centers is the most important modulators of the experience of pain (3). Patients with chronic pain suffer from consequences by the pain on biological, psychological and social levels, according to the biopsychosocial model of chronic pain (10). Examples are regarding biological level sensory disturbances, sex hormones, on the psychological level depression, anxiety, stress and on the social level isolation, sick-leave, apathy etc (11).

These consequences can be severe for the patient by resulting in reduced quality of life and ability to perform daily activities. Treatment of chronic pain is therefore often multimodal, i.e. it includes several types of treatments that affect multiple contributing factors in a coordinated manner. Examples could be a combination of pharmacology, physical therapy and behavioral therapy to reduce the impact of chronic pain on the patient’s quality of life (3).
Orofacial pain

A systematic review found a median prevalence of orofacial pain of 13%. The prevalence varied between 1% and 48% in the included studies, which was considered due to variations in definition of the term “orofacial pain” and methodology (1). Orofacial pain seems to be more prevalent in women and most common in fertile ages (4,5,12). Pain localized in the masticatory muscles and temporomandibular joint (TMJ) regions is the most common symptom of this condition, often coupled with impaired masticatory function. Jaw movement and loading like yawning and chewing often aggravate the pain (3).

Pain in the masticatory muscles is common in orofacial pain patients. In the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) (13) there are two diagnoses with established diagnostic performance: myalgia (pain in the jaw, temple, in the ear or in front of the ear that is modified by function, pain location in temporal or masseter muscles as well as familiar pain in at least one of these muscles on palpation or maximum mouth opening) and its subdiagnosis myofascial pain with referral (same as myalgia plus report of pain at site beyond the boundary of the muscle being palpated). Both diagnoses can be identified with high diagnostic accuracy due to their high sensitivity and specificity using the DC/TMD procedure and criteria (13). For myalgia, sensitivity is 0.90 and specificity 0.99.

Depression

Depression represents both a symptom and a syndrome. Depression can exhibit different degrees, such as easy and fast transient sadness to deep and persistent melancholy. These feelings, among many others, increase in depression: inadequacy, lowliness and unworthiness (14). More than 25% of patients with chronic facial pain suffer from major depression, whereas another 25% in the same study met the criteria for a minor form of depression (15).

Chronic pain often results, to some or greater extent, to anxiety, depression, unpleasantness and fear. Depression or anxiety before the onset of pain increases the risk of that pain becoming chronic to a substantial degree (6,7). The interplay between the psyche and the pain is therefore important for the pain experience as well as for the treatment of pain, especially chronic pain.

Sleep quality

Normal sleep duration is usually from 6 to 9 hours in adults. A feeling of being refreshed and alert on awakening is a sign of good sleep quality. There are increased sleep arousal and decreased deep sleep in chronic pain patients with an association between chronic pain and poor sleep quality (16). Sleep enhances many functions in humans, such as physical recovery, biochemical refreshment, memory and emotional regulation. Sleep deprivation (lack of sleep) can therefore in many cases have devastating consequences. Sleep deprivation may trigger mood alteration, social dysfunction and complaints of bodily pain. Other effects that can occur during longer periods of sleep deprivation are physical and mental health problems (16).
**Temporomandibular disorders and sleep**

Temporomandibular disorders (TMD) are usually associated with chronic orofacial pain and have been associated with significant sleep disturbance (17). About 77% of patients with chronic orofacial pain report a reduction in sleep quality and quantity (18). Other studies estimate that 50% to 88% of patients with chronic pain present sleep disturbance (19). Prevalence studies have shown that patients who have sleep difficulties are twice as likely to report frequent jaw pain symptoms (9).

**Interaction between chronic pain, depression and sleep quality**

A bad sleep during the night enhances pain. Pain, in turn, disrupts sleep (20). Both experimental and clinical data support that pain disturbs sleep and that poor sleep quality increases pain. Clinically, the bidirectional relationship between sleep loss and pain may serve to perpetuate and amplify sleep loss and chronic pain via a vicious cycle (20,21). This relationship can be influenced by various psychological and biologic factors. For example, depression and anxiety have complex interactions with both pain and sleep. There is, however, very little direct scientific knowledge of the basic neurochemical mechanisms that account for this reciprocal association (Fig. 1) (20).

![Diagram of the bidirectional relationship between sleep loss and pain](image)

*Figure 1. The figure presents potential mechanisms of the bidirectional relationship between sleep loss and pain. This relationship involves the inflammatory system, hypothalamus-pituitary-adrenal (HPA) system, opioid system, monoaminergic system and melatonin system. After (20) Lavigne (2009, p 156).*

Sleep disturbances is a common health problem in Sweden with a prevalence of 24% (22). Many of the treatments available today do not have a strong scientific basis, according to the Swedish Council on Health Technology Assessment (22). The available studies are few and with poor quality. At the same time as sleep disturbances are common, orofacial pain is also common with a prevalence of approximately 13% (1). The overlap between chronic orofacial pain (like myalgia of the masticatory system), psychological distress and sleep disturbances is substantial (17,23,24). These patients are primarily seen in the general dental practice why increased knowledge in
this field, hopefully provided by the present study to some extent, could eventually lead to better management of both chronic orofacial pain and sleep disturbances.

**Scientific aim**
The aim of this project was to investigate the influence of chronic orofacial pain and psychological factors on sleep quality in patients with myalgia of the masticatory muscles. Our hypothesis is that sleep quality is impaired by psychological factors and chronic orofacial pain, including its consequences.

**Materials and methods**

**Patients**
All patients that were examined at the Department Orofacial Pain and Jaw Function or the Orofacial Pain Unit between June 2014 and Sept 2015 were also asked to participate in this study. A total of 144 patients were examined, of these 88 patients did not meet the inclusion- and exclusion criteria and 19 patients declined from participating in the study. Thirty-seven patients were then included (Table 1).

Inclusion criteria were diagnosis of myalgia or myofascial pain with referred pain according to Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) (13) and a completed Pittsburg Sleep Quality Index questionnaire (Table 1). Exclusion criteria were age <18 years, sleep apnea and psychiatric diagnoses (except depression and anxiety).

This study was approved by the Regional Ethics Committee in Lund, Sweden (Dnr 2015/339).

**Study design**
The study was retrospective and included all possible patients examined at the Department of Orofacial Pain and Jaw Function or Orofacial Pain Unit during one year and four months. Consecutive and already examined patients were contacted by mail for consent to participate by allowing us to extract data from their patient records. Signed opt-out consent forms received by mail from the patients were collected by the responsible specialist.

The patients were examined at Department of Orofacial Pain and Jaw Function or Orofacial Pain Unit by allowing them to complete a battery of questionnaires and undergo a very structured clinical examination according to the DC/TMD. The validated questionnaires assessed, among other things, the degree of depression, sleep quality and the intensity of pain and pain-related disability. The examination methodology is routine in the department since over three years and is based on scientifically validated questionnaires and validated examination methods with high sensitivity and specificity for the two diagnoses myalgia and myofascial pain with referred pain in the masticatory muscles. At the clinical examination masticatory- and neck muscle pain during movement or palpation, were examined.
Questionnaires

The Pittsburgh Sleep Quality Index (PSQI) was used to assess the self-evaluated degree of sleep quality. The questionnaire has been used in many settings, clinical activities and including research, and has even been used in the diagnosis of sleep disorders (25,26). PSQI have been used in clinical studies and have proven to have high test-retest reliability and a good validity in the assessment of sleep problems (e.g. primary insomnia and distinguishing good and poor sleepers) (25,27). The clinical properties and clinimetric of the PSQI recommend its efficacy both in search activities and psychiatric clinical practice (26).

The following questionnaires were also used for assessment of pain and psychological factors: Graded Chronic Pain Scale (GCPS), Patient Health Questionnaire-9 (depression; PHQ-9), General Anxiety Disorder-7 (anxiety; GAD-7), Perceived Stress Scale-10 (stress; PSS-10), Patient Catastrophizing Scale (PCS) and a standardized pain drawing (to determine if the orofacial pain is local or part of a regional or generalized pain condition).
Clinical examination
Patients who are referred to the department Orofacial Pain and Jaw Function or Orofacial Pain Unit was examined by one of two specialists. The clinical examination was carried out according to the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) (13). The dentists that examined the patients are highly trained in DC/TMD to the highest level (28,29). The examination was conducted to identify patients with the DC/TMD diagnoses myalgia and myofascial pain with referred pain. The examination covers pain location, jaw movement capacity and movement pain, temporomandibular joint (TMJ) noises and palpation pain in the masticatory muscles and over the TMJ.

Statistics
Stata 13.1 (StataCorp, College Station, TX, USA) was used to compute the statistical tests applied in this study. Non-parametric statistics were used, for descriptive statistics median and 25th/75th percentiles were reported.

The Mann-Whitney U-test was used to calculate the significance of differences between groups. For univariate correlations, Spearman ranked correlation test was used to calculate the significance of the relations between the variables. Multivariate logistic regression was applied to calculate the predictive value by a combination of variables on poor sleep quality. The PSQI score was then dichotomized to 0 (PSQI score 0-5) and 1 (PSQI score >5). We excluded variables (three variables in total) from the logistic regression based of lowest contribution to the total model. A probability level of $P < 0.05$ was considered as significant.

Results

Descriptive statistics
Table 2 shows sleep quality, pain and psychological factors in the 37 patients. In our total material, 75% of the patients reported poor sleep quality (PSQI >5), 73% reported at least mild depression degree, 54% reported at least mild degree of anxiety, 59% reported at least a moderate stress level and 38% reported a clinically relevant degree of catastrophizing.

Prevalence of generalized pain was 64% in the myalgia patients and 69% in the patients with myofascial pain with referral. Prevalence of regional and local pain was 18% and 18% in the myalgia patients and 16% and 16% in the patients with myofascial pain with referral. There was no significant difference in distribution of pain between patients with myalgia and patients with myofascial pain with referral.
Differences between good and poor sleep quality
Patients with poor sleep quality showed higher degree of depression (p = 0.003), anxiety (p = 0.033), stress (p = 0.040) than patients without poor sleep quality.

Differences between patients with myalgia and myofascial pain with referral
There were no significant differences in sleep quality, depression, anxiety, stress or catastrophizing between patients with myalgia and patients with myofascial pain with referral.

Univariate regression
There were significant univariate correlations between sleep quality and degree of depression ($r_s = 0.53$, $n = 37$, $p = 0.001$), anxiety ($r_s = 0.55$, $n = 37$, $p < 0.001$), stress ($r_s = 0.48$, $n = 37$, $p = 0.003$) and catastrophizing ($r_s = 0.49$, $n = 37$, $p = 0.002$).

Table 2
Sleep quality and psychosocial factors in 37 patients with painful temporomandibular disorders (myalgia or myofascial pain with referral in the masticatory system).

<table>
<thead>
<tr>
<th></th>
<th>Percentiles</th>
<th>Median</th>
<th>25</th>
<th>75</th>
<th>n</th>
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<tr>
<td>Sleep quality</td>
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<td>11</td>
<td>5</td>
<td>13</td>
<td>37</td>
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<tr>
<td>Number of masticatory</td>
<td>0 - 12</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>muscles with referred pain</td>
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<td></td>
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<tr>
<td>Psychosocial factors</td>
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<tr>
<td>Characteristic pain intensity</td>
<td>NRS 0-10</td>
<td>6.0</td>
<td>4.5</td>
<td>7.3</td>
<td>35</td>
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<tr>
<td>Pain-related disability</td>
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<td>0.0</td>
<td>4.6</td>
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<tr>
<td>Depression</td>
<td>0 - 27</td>
<td>12</td>
<td>4</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0 - 21</td>
<td>7</td>
<td>1</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Stress</td>
<td>0 - 40</td>
<td>14</td>
<td>10</td>
<td>26</td>
<td>37</td>
</tr>
<tr>
<td>Catastrophizing</td>
<td>0 - 52</td>
<td>23</td>
<td>10</td>
<td>34</td>
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<td>Pain distribution</td>
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PSQI = Pittsburgh Sleep Quality Index; NRS = Numerical Rating Scale, PHQ-9 = Patient Health Questionnaire - 9 (depression); GAD-7 = Generalized Anxiety Disorder - 7; PSS-10 = Perceived Stress Scale - 10 (Stress); PCS = Patient Catastrophizing Scale.
There were no significant relations between degree of sleep quality impairment and characteristic pain intensity, degree of pain-related disability, depression, anxiety, stress, catastrophizing and number of masticatory muscle sites with referred pain among the patients that reported poor sleep quality (PQSI > 5).

In the patients with myofascial pain with referral, there were significant univariate correlations between degree of sleep quality impairment and degree of depression ($r_s = 0.44, n = 24, p = 0.031$), anxiety ($r_s = 0.41, n = 24, p = 0.048$) and catastrophizing ($r_s = 0.41, n = 24, p = 0.048$).

**Multivariate logistic regression**

![Figure 1. Multivariate logistic regression with good or poor sleep quality (PSQI > 5) as dependent variable showed that characteristic pain intensity, degree of pain-related disability, depression, anxiety, stress, catastrophizing and number of masticatory muscle sites with referred pain significantly explained poor sleep quality ($p = 0.031$). ROC analysis showed an area under the curve of 0.88 AU for this combination of variables.](image)

Multivariate logistic regression with good or poor sleep quality (PSQI > 5) as dependent variable and characteristic pain intensity, depression, stress and number of sites with referred pain as independent variables significantly explained poor sleep quality ($p = 0.001$). ROC analysis showed an area under the curve of 0.87 AU for this combination of variables.
Discussion

This study shows that sleep quality in patients with myalgia of the masticatory muscles is substantially impaired by depression and chronic orofacial pain as well as anxiety, stress and catastrophizing.

Characteristic orofacial pain intensity, degree of orofacial pain-related disability, degree of depression, anxiety, stress, catastrophizing and number of masticatory muscle sites with referred pain were together strongly associated with poor sleep quality. The combination of characteristic pain intensity, depression, stress and number of sites with referred pain equally strongly explained poor sleep quality, indicating that those variables may be even more important for sleep quality. This means that both pain itself and psychological factors seem to disrupt sleep quality, possibly in a co-dependent and perhaps synergistic manner. Our findings are supported by studies showing influence on sleep quality by orofacial pain (23), depression (30), anxiety (30), stress (31), and catastrophizing (32). For example, patients with insomnia show more catastrophizing than people with good sleep quality (32). In a study among clinical years medical students, high stress levels seemed to influence their quality of sleep. Patients with tinnitus who also had anxiety and depression showed severe sleep impairment (30). High-school students between the age of 16 and 18 years showed that stress contributed to poor sleep (33). Orofacial pain has been associated with sleep disorder by delaying sleep onset or inducting a sensation of unrefreshing sleep at awakening (34).

The present study specifically investigated factors that may influence sleep quality but most likely sleep quality affects the pain experience and psychological factors (31,32,35,36). There are several studies that imply a bidirectional relationship between pain and psychological factors versus sleep quality, i.e. sleep quality may affect the pain experience and psychological factors like depression and stress. For example, in a study of 155 chronic pain patients, disrupted sleep quality was found to mediate pain-related disability via influence on depression and pain intensity (37). Work-related stress and sleep quality show a bidirectional relation (31). The sleep quality among football athletes affects their level of anxiety and performance (35). An interview with 30 patients revealed that patients with insomnia produced significantly more catastrophizing steps than good sleepers (32). Another study indicate that increase in depressive symptoms across adolescence is partially mediated by sleep related developmental changes (36). Therefore it seems to be a complex and bi-directional relation between sleep quality, pain and psychological factors, also in patients with myalgia of the masticatory system as a part of their chronic orofacial pain. Whilst poor sleep quality has been suggested to influence chronic pain in several studies, chronic orofacial pain has not been studied extensively in this respect. Although this study comprises data that could be used for such calculations, it was not within the scope of this particular study to investigate those relationships.

The number of masticatory muscle sites with referred pain was in this study used as a measure for central sensitization, which in turn has been related to pain and
psychological distress. In myofascial TMD, a widespread central sensitization has been suggested as one major factor and these patients have greater referred pain from more frequent trigger points (38). In our study, the number of masticatory muscle sites with referred pain was part of the relation between chronic orofacial pain, psychological factors and sleep quality. Central sensitization therefore seems to link pain experience, psychological factors and sleep, which implies that assessment of central sensitization could be of clinical relevance. Indeed, patients with both local pain in nonspecific low back and referred pain from the back and hip muscles had poorer sleep quality higher disability than controls (39). Unfortunately, there are no established and truly valid clinical measures of central sensitization yet. Number of masticatory muscle palpatory pain sites that show referred pain may be one variable that may be further investigated as a measure of central sensitization. Wind-up, allodynia, dysesthesia, aftersensation etc. are other potential variables in this respect.

The relationship between pain, depression, anxiety, stress, catastrophizing, referred pain and sleep quality has been studied in several previous studies. However, as far as we know no study have studied these relations in patients with myalgia, which make our study unique in this perspective. Future studies could explore the association between referred pain, sleep quality and psychosocial aspects and its value as a prognostic marker for treatment effects. If referred pain is found to have prognostic value, this variable could be of importance to incorporate in examinations of TMD pain patients before planning treatment. Another important future direction would be to treat sleep disturbance and assess the relation between improved sleep quality and reduced TMD pain.

Higher degrees of depression, anxiety, stress and catastrophizing were all associated with lower sleep quality. It thus seems that when poor sleep quality is established, anxiety, stress and catastrophizing contribute to the degree of poor sleep quality. The significance of these findings are still not known but suggests that, in addition to treatment of the poor sleep quality itself, also treatment of anxiety and stress management could help to reduce the degree of poor sleep quality. In turn, this may have a positive effect on the chronic pain and its consequences.

This study could not establish a difference in sleep quality, depression, anxiety, stress, catastrophizing or pain distribution between patients with myalgia and patients with myofascial pain with referral. This was surprising given that, for example, the degree of referred pain was part of the set of variables that explained poor sleep quality. On the other hand, 75% of all patients had poor sleep quality according to the established cut-off for the PSQI indicating that a large proportion of the myalgia patients also had poor sleep quality.

Methodological considerations
The PSQI is a validated and often-used instrument to assess self-reported sleep quality. It was specifically developed to distinguish good and poor sleepers. PSQI has been shown to have high validity as well as clinimetric and clinical properties (26). Assessment of sleep quality has been suggested to be an important addition to assessment of sleep duration and maybe even more important. The other psychometric
instruments used in this study have all been found to be valid and reproducible regarding assessment of degrees of depression, anxiety, stress and catastrophizing.

There were two operators that examined the patients. Both of these are highly trained in DC/TMD and have a very low inter-individual variation on the diagnostic level, which strengthens this study.

One possible limitation of the study is that the study was not able to detect any difference in sleep quality, depression, anxiety, stress or catastrophizing between patients with myalgia and patients with myofascial pain with referral. Since presence and extent of referred pain is likely to be a measure of the degree of central sensitization, it was expected that some or all of these variables should differ between the diagnoses. However, the prevalence of generalized pain was 64% in the myalgia patients and 69% in the patients with myofascial pain with referral, which suggests that a large proportion of the patients with myalgia had not only a local myalgia of the masticatory system but a more generalized condition.

From an ethical aspect, neither the procedures used in the present study nor the results impose any ethical dilemma. On the other hand, a possible benefit by the study is an increased knowledge regarding the importance of and complex interactions between chronic pain, psychosocial factors and sleep quality. This has the potential, hopefully, to eventually lead to better management of chronic orofacial pain and sleep disturbances. Our study therefore emphasizes the importance, both from a clinical and ethical point-of-view, to consider psychosocial factors including sleep quality in the assessment of the chronic pain patient and his/her situation. The DC/TMD, which is intended to be used both in general practice and at the specialist level, includes validated instruments for convenient assessment of psychosocial factors. There are thus important reasons and available means to assess psychosocial factors. Failure to do so is therefore possibly unethical in today’s dentistry.

One of the objectives for the undergraduate education in dentistry at Malmö University is to be able to explain the complexity of chronic orofacial pain from a biological, psychological, social and behavioral perspective (40). This study attempts to deepen the author’s knowledge and understanding of the complex interactions between sleep quality, chronic orofacial pain and psychosocial factors.

In conclusion, this study indicates that sleep quality in patients with myalgia of the masticatory system is influenced by both chronic pain intensity and related disability, number of masticatory muscle sites with referred pain as well as the psychological factors depression, anxiety, stress and catastrophizing.

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References


