Chapter 7

General Discussion
As for other musculoskeletal disorders, the prognosis for the majority of Temporomandibular disorders (TMD)- pain is favorable[1] [2] [3]. About half of the people with TMD-pain complaints seeks care for their complaints [4]. Epidemiological studies show that also non-care seekers often improve from their complaints naturally. For those who do seek care, common treatments are counseling, physiotherapy and oral appliances. Of these patients about 75-85% benefit from these treatments [5]. However for some patients treatment success becomes difficult to achieve, and pain complaints last. Some of these patients continue their search for treatment. Especially in those, pain may not only impair physical function, but may also result in mental and emotional difficulties, and a diminished quality of life [6, 7]. It is commonly accepted that biopsychosocial factors play a role in TMD pain. However, it is a challenge to find factors involved in treatment success in those patients that already have complaints for long periods of time and that have underwent previous treatment. To improve patient care, particularly for those with long lasting pain complaints, much can be gained by further understanding the factors that influence the development of pain. Therefore, the aim of this thesis was to improve the understanding of the role of biopsychosocial factors in the development TMD-pain complaints and care seeking behavior.

In perspective

Chronic pain is usually defined by an interval of time since onset; the two most commonly used markers being 3 months and 6 months since onset [8], though some have placed the transition from acute to chronic pain at 12 months [9]. It has been proposed that chronic pain should not be defined merely by the duration of pain, but needs a multidimensional view that accounts for pain characteristics, psychological and behavioral aspects [5] [10]. Such a view would allow to recognize patients that are at risk to develop long lasting complaints at an early stage. By identifying aspects that play a role in future outcome, risks to develop poor outcome can be reduced [10].

The biopsychosocial model is a widely accepted multidimensional approach that posits that biological, psychological, and social factors, all play a significant role in the context of disease or illness [11] [12]. At the core of the biopsychosocial model is the assumption of an on-going sensation that is nociceptive in nature or which is perceived by the sufferer as being painful. The patient’s cognitions, i.e. what they think and understand about this sensation, will influence their emotional response [13]. In line with this approach, to explain why some patients recover from pain, while in others pain complaints persist, nowadays, the so-called fear-avoidance model is widely used [14]. It suggests that a minority of people respond to pain by avoiding physical activities, which may lead to a reduction of social activities and at the same time an increase of all kinds of psychological symptoms like depression, somatization and anxiety, resulting in long periods of pain [14]. In this fear-avoidance model, catastrophizing is an important precursor of chronic pain.
In our clinical studies, the biopsychosocial model was used as framework to look at the development of TMD-pain complaints and subsequent care seeking behavior. A questionnaire survey was conducted among a sample of participants with TMD pain. The questionnaire aimed to cover a wide range of potentially important biopsychosocial factors. Many instruments were available to implement in the questionnaire: the so-called ‘Characteristic Pain Intensity’ (CPI) [15] was used to measure pain intensity, the Symptom Check List 90 (SCL-90) [16] was used to measure depression and somatization, and coping strategies like catastrophizing were measured by the Pain Coping and Cognition List (PCCL) [17]. Next to these commonly used variables, also a recently introduced instrument to measure fear of movement for TMD (part of the fear-avoidance model) was incorporated [18]. For most factors that were considered important, measures could be adapted to apply in TMD-pain patients, others were not readily available and needed to be developed. Among these were the so-called ‘Patient-Specific Approach’ (PSA) measure, and a measure for social support in pain patients. The patient-specific approach measure is an instrument that is widely used in patients with other musculoskeletal complaints, like low-back pain or neck pain [19] [20]. It rates the amount of hindrance patients perceive while performing the activity that is most important to them and is hindered because of their jaw complaints. The ‘Social support and Pain Questionnaire’ (SPQ) is a short questionnaire that measures the satisfaction with social support related to pain. In Chapters 2 and 3, the development of the Patient Specific Approach measure (PSA) and the ‘social support and pain questionnaire’ (SPQ) is described. Both instruments were found to have good clinometric properties and were subsequently incorporated in the questionnaire.

In the questionnaire survey, biopsychosocial characteristics of those who did seek care for their TMD-pain complaints (care seekers), were compared with those who did not (non-care seekers) (Chapter 4). Additionally, the group of care seekers was further studied with respect to the number of care practitioners they had attended for their TMD complaints (Chapter 4). Moreover, in Chapter 5, to further investigate differences between care seekers and non-care seekers, in-depth interviews were performed. The results showed that, independent from the intensity of the pain complaint, care seekers were more alarmed by their complaints than non-care seekers. This was expressed in higher levels of fear of movement (Chapter 4) and more catastrophical thoughts (Chapter 5) among the care seekers as compared to the non-care seekers. Moreover, within the subsample of care seekers, also the continuous search for help (as expressed by the number of healthcare practitioners they had visited) was mainly related to the level of catastrophizing thoughts (Chapter 4), and, surprisingly, not influenced by the pain intensity. Finally, it was investigated whether biopsychosocial factors also influence the rehabilitation of TMD-pain patients in a 6-month follow-up study (Chapter 6). This follow-up study showed that independent from pain duration, patients who had visited many healthcare practitioners and who showed higher levels of hindrance in function (PSA), had a higher risk of unsuccessful treatment outcome (Chapter 6).
A notable finding of the studies was that despite the fact that many biopsychosocial variables were taken into account, only few factors were found to be predictive for care seeking (Chapters 4 and 5) and six-month improvement (Chapter 6). A possible explanation for this finding is that, even though many biopsychosocial variables are considered to influence care seeking behavior and recovery, their individual contributions are probably small. The interaction between the various biopsychosocial variables further complicates the search for evidence for the individual contribution of specific factors. Also in other longitudinal studies to the persistence of pain, only few predictors (e.g., depression, history of previous attacks, passive coping strategies and fear-avoidance beliefs) were inconsistently reported to predict poor treatment outcome [21-24].

Analogue to our findings in the comparison between care seekers and non-care seekers, in the follow-up study it was hypothesized that especially the variables that are related to the fear-avoidance model would predict six-month improvement. To our surprise, however, we found no associations between improvement and fear of either movement nor catastrophizing (Chapter 6). The fear-avoidance model was developed to explain the transition from acute (< 6 months) to chronic pain (> 6 months) [25]. Most of the patients in our study had pain complaints for more than 6 months. Apparently, the proposed mechanism to explain the transition from acute to chronic pain from the fear-avoidance model cannot be adopted to understand the underlying mechanisms for long-term improvement in chronic pain patients. The finding that catastrophizing and fear of movement were related to care seeking (Chapter 4 and 5) is in line with earlier findings that levels of catastrophizing in people with pain from the general population were lower than in clinical samples [26]. As about only half of the people with (TMD-)pain complaints seek care for their pain [27], and especially those who seek care show higher levels of catastrophizing and fear of movement (Chapter 4 and 5), the results could also suggest that theories on the development of chronic pain like the fear-avoidance model, might be biased by the group that is mostly studied (care seekers). That is, clinicians may develop an image of chronic pain patients being avoidant and worried about their complaints, which is more related to care seeking behavior than to the chronic pain itself.

The finding that six-month improvement was negatively related to the number of healthcare practitioners visited before (Chapter 6), might be an expression of the difficulties care practitioners have in setting a clinical diagnosis. This is confirmed in the interview study (Chapter 5), where care seekers often described that it was difficult to get an adequate referral for their pain complaints. Possibly, not finding adequate care leads to more concerns about the complaints in those who keep seeking care. Or, just the other way around, those with more concerns continue to seek help (Chapter 4). Either way, in the time that patients are searching for help, pain complaints last and sensitization processes evolve, which, in turn, complicates treatment.
Future Directions

This study was performed in the context of the Dutch health care system. In this system, the national health insurance is an obligatory insurance for everyone who falls under the scope of the Dutch social insurance obligation. It contains a standard package of the necessary care (medical care by general practitioners, specialists and midwives, most medication, and nursing care). Dentistry and physiotherapy are not included in the standard package, however, most of the Dutch population has an expanded package that includes dental care and physical therapy [28]. Since in The Netherlands, specialized care is not freely accessible, the participants that were recruited at a TMD-centre, were referred by a general practitioner, a dentist, or another specialist. Although participants declared in the interviews (Chapter 5) that financial aspects did not play a role in their motivation to (not) seek care, it would be interesting to investigate whether the findings are generalizable for other countries with an advanced economy such as The Netherlands.

This study revealed some interesting aspects that play a role in the development of TMD-pain and subsequent care seeking behavior. However, as mentioned before, it is notable that as in other questionnaire studies, only few characteristics were identified. Possibly, the only few answers that were gained until now, is a result of the research designs. That is, despite the wide variety of factors that were incorporated in questionnaire studies, still many other possibilities are unexplored. Possibly, studies with different perspectives provide more insights. Broadening our view, some interesting findings show up in literature. For example, there is some evidence that chronic pain conditions cluster in families [29] [30]. Twin studies have reported heritability estimates for back pain ranging from 30% to 57% [31] [32]. Also for TMD-pain, a recent study has provided evidence for a genetic vulnerability for TMD-pain [33]. To improve current knowledge on the mechanisms involved in the critical early stage of the development of chronic pain, the role of genetic variability in this specific pain stage, in combination with clinically relevant information from the biopsychosocial model should be further investigated. Subsequently, this line of research may lead to better treatment strategies to prevent the transition from acute to chronic pain. For example, when patients with a high risk for the development of chronic pain are already recognized at an early stage, patient-tailored treatment strategies can be offered, which may include a multidisciplinary treatment at a relatively early stage [34] [35].

Another perspective was presented recently by Gale et al. who reported that children with lower intelligence are at greater risk of chronic pain later in life [36]. Based on a longitudinal population based-study with a large sample size (N>6000), they were the first to show lower intelligence as a risk factor for chronic pain, independently from socioeconomic position, body mass index and other covariates. The authors suggest that people with poorer mental abilities may be less able to interpret bodily symptoms correctly, leading to an increased risk of developing pain complaints [37].
Clinical Implications

The findings of this thesis have some implications for healthcare that is provided for TMD-patients. First, the questionnaires that were developed for this research (Patient-Specific Approach for TMD, Chapter 2) and the Social support Pain Questionnaire (Chapter 3), have gained interest in other research fields and were adapted by practitioners working with chronic pain and TMD-pain. For example, in software programs for physiotherapists, the PSA for TMD-pain complaints is being included as one of the available tools. Comparable to the use of the PSA for low back pain, which is now used in national guidelines for physiotherapist [38], the PSA for TMD-pain complaints could be recommended to be used in future guidelines for orofacial pain, as it was found to predict 6-months improvement.

Second, because care seekers showed to be more worried about their complaints than non-care seekers, it is important for health practitioners who treat TMD-pain patients to verify the beliefs about their pain complaints. This finding underlines the importance of reassurance as it might be an essential part of treatment need.

Third, as the interviews showed that some of the non-care seekers were not referred adequately (Chapter 5), it is recommended to give more attention to referral directions for health care providers, and to promote postgraduate-courses, in which recognizing TMD-complaints and referral options for TMD-patients are emphasized. Therefore, it is promising that the newly developed guideline for orofacial pain will be released soon[39]. The guideline was developed by an expert group of medical specialists who are all involved in patients with orofacial pain, including the fields of neurology, oral surgery, dentistry and physical therapy. The guideline provides an overview of different disorders causing orofacial pain, and offers referral directions for health care providers [39].

Fourth, adequate information on the Internet may help people to find their way to a health care provider, as both non-care seekers and care seekers (Chapter 5) reported that they searched the Internet for information. This suggestion is supported by an earlier report on health care seeking behavior on the Web [40], which pointed out that the information found on the Web has a direct influence on the decisions people make about their health care and also on their interactions with the health care practitioners [40]. TMD-pain sufferers would be helped if TMD-clinics provide the Internet with high quality, evidence-based information regarding TMD. Moreover, since this study confirmed earlier findings [41], that care seekers experience relief in finding fellow-sufferers, patients could be facilitated to come across fellow sufferers. Possibly, and as an addition to a treatment program, group sessions of pain sufferers or Internet communities could offer a platform where patients can meet fellow sufferers.

Finally, the result suggest that when the following yellow flags are present in a patient: (a) long pain duration, (b) the patient has visited many healthcare practitioners or (c) high levels of hindrance on function as measured with the PSA (Chapter 2), prognosis for treatment is poor (Chapter 6). For these patients, multidisciplinary approaches in
which the psychologist plays an essential part, are best fitted to offer these patients strategies in how to cope with pain.

**Conclusions**

Besides from the intensity of the pain complaint, care seekers are more alarmed by their complaints than non-care seekers. This is expressed in higher levels of fear of movement and more catastrophic thoughts in care seekers as compared to non-care seekers. Moreover, within the subsample of care seekers, also the continuous search for help (as expressed by the number of healthcare practitioners they had visited) is mainly related to the level of catastrophizing thoughts and use of pain medication, and not influenced by the pain intensity.

Besides from pain duration, patients who have visited many healthcare practitioners and who show higher levels of hindrance in function (as measured with the Patient Specific Approach), have a higher risk of persisting pain complaints at 6-months follow-up.

Surprisingly, biopsychosocial factors like social support, depression and somatization were not found to be related to neither care seeking nor improvement.
References


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