Masterclass

Thinking beyond muscles and joints: Therapists’ and patients’ attitudes and beliefs regarding chronic musculoskeletal pain are key to applying effective treatment

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A B S T R A C T

It is well established that the biomedical model falls short in explaining chronic musculoskeletal pain. Although many musculoskeletal therapists have moved on in their thinking and apply a broad biopsychosocial view with regard to chronic pain disorders, the majority of clinicians have received a biomedical-focused training/education. Such a biomedical training is likely to influence the therapists’ attitudes and core beliefs toward chronic musculoskeletal pain. Therapists should be aware of the impact of their own attitudes and beliefs on the patient’s attitudes and beliefs. As patients’ attitudes and beliefs influence treatment adherence, musculoskeletal therapists should be aware that focusing on the biomedical model for chronic musculoskeletal pain is likely to result in poor compliance with evidence based treatment guidelines, less treatment adherence and a poorer treatment outcome. Here, we provide clinicians with a 5-step approach toward effective and evidence-based care for patients with chronic musculoskeletal pain. The starting point entails self-reflection: musculoskeletal therapists can easily self-assess their attitudes and beliefs regarding chronic musculoskeletal pain. Once the therapist holds evidence-based attitudes and beliefs regarding chronic musculoskeletal pain, assessing patients’ attitudes and beliefs will be the natural next step. Such information can be integrated in the clinical reasoning process, which in turn results in individually-tailored treatment programs that specifically address the patients’ attitudes and beliefs in order to improve treatment adherence and outcome.

1. Introduction

Chronic musculoskeletal pain is a complex and challenging medical problem. Therefore, it is a challenging issue for researchers and clinicians, including manual therapists. Over the past decades, scientific understanding of chronic musculoskeletal pain has increased substantially. It is now well established that the biomedical model falls short in explaining and treating chronic musculoskeletal pain: in the majority of patients with chronic musculoskeletal pain, musculoskeletal dysfunctions are unable to fully explain the complex clinical picture of pain complaints, disability and distress (Yunus, 2007; Sterling and Kenardy, 2008). Hence, a biopsychosocial approach to the clinical assessment and treatment is required. More specifically, evidence from published randomized controlled trials addressing rehabilitation of chronic musculoskeletal pain has revealed that self-efficacy, depression, pain catastrophizing and physical activity should be the primary treatment targets for patients with chronic musculoskeletal pain (Miles et al., 2011).

In contrast to the increasing evidence for the biopsychosocial model for chronic musculoskeletal pain (e.g. Guzmán et al., 2001;...
Hoffman et al., 2007; Foster et al., 2010; Pool et al., 2010), the majority of clinicians have received a biomedical-focused training/education. The biomedical focus applies in part to the manual therapy profession as well, with a long history of biomechanical-focused treatments. Such a biomedical training is likely to shape the therapists’ attitudes and core beliefs toward chronic musculoskeletal pain, as evidenced by a randomized trial comparing biomedical versus biopsychosocial training about low back pain in physiotherapy students (Domenech et al., 2011).

On the other hand, many musculoskeletal therapists have moved on in their thinking and apply a broad biopsychosocial view with regard to chronic pain disorders. Likewise, an increasing number of musculoskeletal physiotherapy/manual therapy curricula emphasize the biopsychosocial model, and teach behavioral treatments in addition to hands-on treatment. Manual therapy journals has contributed substantially to this development: a large number of published studies and review articles advocate a broader view to musculoskeletal pain (e.g. Ostelo et al., 2003; Sterling and Kenardy, 2008; Nijs et al., 2011a; Mutsaers et al., 2012).

In case the therapist holds strong biomedical beliefs regarding chronic musculoskeletal pain (e.g. chronic low back pain is solely due to instability of the lumbar spine, improper lifting of heavy objects or poor posture; manual therapy for chronic whiplash associated disorders patients should comprise of hands-on muscle and cervical joint treatment solely), the patient will adopt these beliefs accordingly. Indeed, there is ample evidence that the therapists’ attitudes and beliefs regarding musculoskeletal pain are associated with the beliefs of their patients and the clinical management (i.e. the nature of the treatment provided) (Darlow et al., 2012). Therapists with a biomedical orientation are more likely to advise patients to limit physical activities and work, implying that they ‘teach’ their patients to become fear-avoidant (Houben et al., 2005a; Holden et al., 2009; Darlow et al., 2012). Such therapists will unlikely adhere to evidence-based guidelines for the treatment of chronic musculoskeletal pain (Darlow et al., 2012). Likewise, the attitudes and beliefs of general practitioners toward chronic knee pain and knee osteoarthritis are related to the underuse of exercise in the management of these patients, including the low physiotherapy referral (Cottrell et al., 2010).

Taken together, musculoskeletal therapists should be aware of the impact of their own attitudes and beliefs on patient’s attitudes and beliefs. It should be noted that many patients hold strong biomedical views on chronic musculoskeletal pain even before their first visit to their physician or therapist. As patient’s attitudes and beliefs influence treatment adherence (Nicklas et al., 2010), musculoskeletal therapists should become aware that focusing on the biomedical model for chronic musculoskeletal pain is likely to result in poor compliance with evidence based treatment guidelines, less treatment adherence, and poorer treatment outcome (especially in terms of functional recovery). For instance, research has taught us that treatment expectancy and credibility are of prognostic value to rehabilitation outcome in patients with chronic low back pain (Smeets et al., 2008). The therapists’ beliefs and attitudes account for the communication between the therapist and patient, including patient education, which in turn modulates treatment expectancy and credibility. The expectancy and credibility beliefs can be positively influenced by the therapist, but focusing on the biomedical model will result in inadequate illness perceptions in patients, which in turn leads to more negative initial responses to patients (van Wilgen et al., 2012).

So how can musculoskeletal therapists improve their care provided to patients with chronic musculoskeletal pain? How can musculoskeletal therapists improve their compliance with international guidelines for the treatment of chronic musculoskeletal pain? Here, we provide clinicians with a 5-step approach toward effective and evidence-based care for patients with chronic musculoskeletal pain (Fig. 1). In what follows it is important to realise that the biopsychosocial model implies integrated clinical reasoning with respect to biological as well as psychological and social factors. The biopsychosocial model should not be used to ignore biomedical factors.

1.1. Self-reflection as a starting point for clinicians treating patients with chronic musculoskeletal pain

Self-reflection is required for the musculoskeletal health care professionals, even for those who have moved on in their thinking. Indeed, it has been demonstrated that previous (biomedical oriented) treatment by physiotherapists is a risk factor for long-term sick leave in patients with low back pain (Reme et al., 2009). This is remarkable and requires self-reflection from all musculoskeletal therapists treating low back pain patients. It is crucial to analyze the convictions of the therapists that shape their behavior toward the chronic musculoskeletal pain patient and the information provided to patients (Laekeman and Basler, 2008), especially because physiotherapists’ attitudes toward musculoskeletal pain has been shown to be predictive of their treatment recommendations (Houben et al., 2005b).

Self-reflection is the first and crucial aspect of the 5-step approach. Broadening the illness beliefs of the therapist from a pure biomedical toward a biopsychosocial perspective is likely to contribute to further improvement of therapeutic strategies and to an improved outcome (Laekeman and Basler, 2008), especially for the treatment of chronic pain. In fact, even manual therapists who learned about the biopsychosocial model might not totally agree with this perspective and might continue preferring treatments based on the biomedical model (Laekeman and Basler, 2008). Hence, it is advocated that all clinicians take this first step. Within this scope it is important to understand that the biopsychosocial model broadens our understanding of musculoskeletal pain, rather than replacing the biomedical model. Biological issues are included in the biopsychosocial model as well; the biopsychosocial model does not imply ignoring biological factors.

Musculoskeletal therapists can easily self-assess their own attitudes and beliefs regarding chronic musculoskeletal pain by filling out self-reported measures themselves. Ruminating about pain and hypervigilance to somatic signs can be easily assessed with short self-reported measures with excellent psychometric properties (e.g. the Pain Catastrophizing Scale, Pain Vigilance and Awareness Questionnaire, etc.) (Sullivan et al., 1995; Van Damme et al., 2002; Kraaimaat and Evers, 2003). These questionnaires, validated on patients, should be filled out by the therapist.

1 http://synergytherapiesofkc.com/forms/PCS-Pain%20Catastrophizing%20Scale.pdf. 2 The questionnaire can be obtained in the original publications of the measure.
imaging he/she is experiencing musculoskeletal pain. Scoring and interpretation is identical as applied in patients (e.g. higher scores on the Pain Catastrophizing Scale and Pain Vigilance and Awareness Questionnaire reflect more catastrophic thoughts and pain hypervigilance, respectively). Alternatively, one can use the Photograph Series of Daily Activities (PHODA), an instrument to determine the perceived harmfulness of daily activities in patients with chronic pain (Leeuw et al., 2007a; Trost et al., 2009).

In addition, musculoskeletal therapists can fill out specific measures for assessing the therapist’s beliefs and attitudes regarding chronic pain (management). The Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT)\(^3\) is specifically designed for that purpose. It is a self-reported measure that discriminates between a biomedical and a biopsychosocial orientation of therapists with regard to low back pain management. Each item is scored on a six-point Likert scale that ranges from totally disagree (score 1) to totally agree (score 6). For example, a high score on the item ‘Increased pain indicates new tissue damage or the spread of existing damage’ indicates a biomedical orientation. Agreeing with the item ‘Mental stress can cause back pain even in the absence of tissue damage’ suggests a biopsychosocial orientation. The PABS-PT is available in several languages (e.g. English, German, Dutch, Brazilian-Portuguese) and appears to generate reliable and valid data (Ostelo et al., 2003; Laekeman and Basler, 2008; Magalhães et al., 2011; Mutsaers et al., 2012). Alternatively, one can use the Health Care Providers’ Pain and Impairment Relationship Scale (HC-PAIRS) for a valid assessment of attitudes and beliefs of therapists about functional expectation for chronic low back pain patients (Rainville et al., 1995).

The PABS-PT was able to show that physiotherapists in response to a 2-day training program obtained a more biopsychosocial orientation, and a decreased biomedical orientation toward the treatment of neck pain (Vonk et al., 2009). Still, self-report can be questioned for the measurement of attitudes and beliefs: therapists who report complying with certain therapeutic guidelines, do not per se adhere to these during daily practice. A short training program of 2–3 days (which are common) is unlikely to result in a long-term behavioral change of the therapist. It requires time, experiences and specific feedback on personal performance. Likewise, 4 half days of training in cognitive behavioral therapy did not alter general practitioners’ knowledge and attitudes at six month follow-up (King et al., 2002). Similar observations were done in a Swedish study, showing that an 8-day university course for physiotherapists did not improve outcome in pain patients (Overmeer et al., 2011). However, the outcome did improve for patients who had a risk of developing long-term disability and had higher levels of catastrophizing or depression, but only if the attitudes and beliefs of their therapists changed during the course (Overmeer et al., 2011).

In case such self-reflection reveals a biomedical orientation, the musculoskeletal physiotherapist is advised to consult relevant scientific literature addressing the biopsychosocial nature of chronic musculoskeletal pain (e.g. Leeuw et al., 2007b; Henschke et al., 2010; den Hollander et al., 2010; Hassett and Williams, 2011), including its biopsychosocially-driven treatment (Fig. 2). Next, the therapist with biomedical orientation is advised to enter a training program for evidence-based management of chronic musculoskeletal pain.

1.2. Assessment of attitudes and beliefs in patients with chronic musculoskeletal pain

Once the therapist holds evidence-based attitudes and beliefs regarding chronic musculoskeletal pain, he/she will likely include patients’ attitudes and beliefs in his/her standard assessment for examining chronic musculoskeletal pain patients. This can be accomplished by in-depth questioning of the patient (interview). If warranted, the abovementioned measures can be used by clinicians to assess pain cognitions. For examining fear-avoidant beliefs, one can use the Tampa Scale Kinesiophobia (Vlaeyen et al., 1995) or the Fear Avoidance Beliefs Questionnaire (Waddell et al., 1993), especially for assessing chronic low back pain patients (both measures are less suited for assessing patients with chronic pain in the neck or in peripheral joints). Besides these specific questionnaires, broader ones like the Örebro Musculoskeletal Pain Screening Questionnaire enable assessing a combination of psychosocial predictors for chronicity, as shown extensively in studies exploring the predictive capacity of this measure for chronicity in acute low back pain (Gabel et al., 2011; Sattelmayer et al., 2012; Nonclercq and Berquin, 2012).

In addition, the patients’ perceptions about their medical problem are of prime importance for guiding the educational part of the treatment, as evidenced by a large prospective cohort study of low back pain patients seen in primary care (Foster et al., 2010). The study revealed that patients’ perceptions that the problem will last long, that many symptoms are related to their back problem, their weak beliefs about self-control and low confidence in their own ability to perform activities despite the pain, were even better predictors of disability at 6 months than fear avoidance, catastrophizing or depression (Foster et al., 2010).

In daily practice, illness perceptions can be questioned or assessed by use of the brief Illness Perception Questionnaire\(^4\) (Broadbent et al., 2006). Illness perceptions reflect the patient’s personal understanding of the illness in terms of identity, cause, time-line, consequences, personal control, and care and cure of their pain (Leventhal et al., 2003). Illness perceptions are based on former experiences and provided information. When the cause, course and consequences of an illness are indistinct, patients typically have negative beliefs about their illness. Negative illness perceptions in chronic pain patients are associated with maladaptive illness behavior, dysfunctioning, poor treatment adherence and treatment outcome. For instance, the perception of constant back strain when working, and negative expectations for return to work, are important predictors (odds ratio’s > 4) for not returning to work in patients with low back pain (Reme et al., 2009).

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\(^{3}\) The questionnaire can be obtained in the appendix of Ostelo et al. (2003).

\(^{4}\) http://www.uib.no/ipq/.
Conversely, adequate pain beliefs lead to increased confidence, which in turn leads to increased activity levels. The information, addressing pain perceptions and coping strategies, should be used by the therapist to tailor the individual education sessions (see below). Education and counseling are capable of adjusting negative illness perceptions in patients with chronic musculoskeletal pain.

1.3. Clinical reasoning including reconceptualizations

As is the case with the therapists’ attitudes and beliefs about chronic musculoskeletal pain, patients can have a biological or biopsychosocial orientation toward chronic musculoskeletal pain. For example, a patient with chronic whiplash associated disorders is convinced that the initial neck trauma caused severe cervical damage that remains invisible to modern imaging methods. Another patient with moderate hip osteoarthritis believes that hip cartilage “is melting away due to erosion” (i.e., a biomedical illness perception — dimension cause). Such a patient holds the following beliefs regarding treatment: “I will not participate in exercise therapy because it will worsen my hip pain and hence the erosion of my cartilage” (fear avoidance beliefs and dimension care and cure of illness perceptions). It is clear that initiating a treatment like graded activity, which targets active behavior rather than pain relief and uses a time-contingent approach to physical activity, is unlikely to be successful in patients with inappropriate illness perceptions. Prior to commencing treatment in such cases, the gap between the perceptions of the patient and the healthcare professional about pain and its treatment should be narrowed. Therefore, it is crucial to reconceptualize pain before initiating the treatment. This can be accomplished by patient education (Nij et al., 2011a) or cognitive treatment of illness perceptions (Siemonsma et al., 2010).

Some patients do have a biopsychosocial orientation toward their chronic musculoskeletal pain problem. Even then, education is warranted to complete their understanding of the disorder and to improve their attitudes toward the treatment. For instance, a patient with chronic shoulder pain with a biopsychosocial orientation toward his medical problem may have very low expectations of a positive treatment outcome. Then the therapist should invest time in educating the patient about the expectations for care, in order to change the maladaptive perception of a negative treatment outcome.

Another example relates to social support provided by the significant other. Some patients with a broad biopsychosocial view on their pain problem are unaware of the importance of social support for recovery. Social support is often of prognostic value for recovery in patients with musculoskeletal pain (e.g., Buitenhuis et al., 2003; Nijs et al., 2011b), including return to work. If a patient’s husband is convinced that the medical committee should provide a drug or surgical treatment for handling his wife’s chronic pain problem, then he is unlikely to support a biopsychosocially-driven rehabilitation program. This will in turn negatively impact upon rehabilitation outcome. Hence, discussing the issue of social support with the patient can be of prime importance for enhancing social support throughout the treatment period and beyond (e.g., the patient may become motivated to involve a significant other in the treatment).

2. Education

Education is a powerful tool in clinical practice. Beside the specific content of the education it also requires specific skills. Fig. 3 provides a diagram summarizing the major steps clinicians should take when providing patient education according to modern pedagogy. Addressing the content of the education, pain (neuro) physiology education has been studied extensively in a variety of chronic musculoskeletal pain disorders (e.g., chronic low back pain, chronic whiplash associated disorders, fibromyalgia), with nothing but positive results (Louw et al., 2011). It requires an in-depth education of altered central nervous system processing of nociceptive and non-nociceptive input. Pain physiology education addresses maladaptive cognitions and illness perceptions. The innovative aspect of pain physiology education is the use of neurophysiology (i.e., the mechanism of central sensitization) to change the perceptions about pain and how to cope with it. This makes it appropriate even for cases reluctant to the biopsychosocial model. For practice guidelines, the readers are referred to Nijs et al. (2011a).

The specific skills required to educate patients are mostly communication skills. Of importance here is that a Socratic-style dialogue of education (Siemonsma et al., 2008) is preferred over ‘lecturing’ to the patient. The therapist activates the patients’ thoughts processes by naively questioning about illness perceptions and potential strategies for improving health (Siemonsma et al., 2008). This approach is in line with motivational interviewing. When combined with physiotherapy, motivational interviewing improves motivational factors and treatment outcomes in people with low back pain (Vong et al., 2011).

Another innovative approach which can be used by musculoskeletal physiotherapists to change illness perceptions and hence behavior is psychological inoculation, a method targeting barriers for behavioral change (Farchi and Giridon, 2010). In psychological inoculation, the therapist introduces the technique by explaining that he/she will provide the patient with a number of challenging statements addressing cognitive barriers for not adopting healthy behavior (the ‘vaccine’). The patient is asked to reject (the ‘antibody’) the statement, and at the same time to motivate the rejection of the statement. In a chronic whiplash patient having poor expectations for treatment outcome, the therapist provides the following statement: “I am certain that you feel that on this planet, there isn’t a single way to improve your health status”. The patient is likely to reject such a statement, and is guided toward speaking out loud about the (small) light at the end of the tunnel. As is the case with the Socratic-style dialogue of education, psychological education guides the patient toward finding the solution for their health issues themselves. As opposed to having the therapist ‘teach’ the patient what to do, this might be a more powerful way of changing the patient’s behavior (e.g. increasing physical activity).

In addition to (or together with) pain physiology education, musculoskeletal therapists can educate their chronic pain patients about aspects of the biopsychosocial model. For instance, the fear-avoidance model (Leeuw et al., 2007b) can be used to educate fear-avoidant patients and to open the path for effective (graded activity) treatment. Alternatively, a patient with persistent behavior regarding physical activity (continuing a high level of physical activity in spite of physical limitations) can gain increased understanding of their pain disorder by understanding the basic principles of self-discrepancies (Waters et al., 2004; Huijnen et al., 2011). In case of persistent behavior, the patients’ evaluation of their actual self is likely to differ from their view of who he/she ideally would like to be (ideal self) or feel he/she ought to be (ought self), or from the patients’ perceptions of how significant others wish they could be (ideal-other self) or ought to be (ought-other self) (Waters et al., 2004; Huijnen et al., 2011).

In line with the education, it is important to address the perpetuating factors for chronicity throughout the treatment. Factors like pain catastrophizing, self-efficacy, depressive thoughts and physical inactivity are some out of the many important psychosocial factors known to perpetuate chronic musculoskeletal pain.
3. Therapy

Education is typically followed by various components of a patient-tailored biopsychosocial rehabilitation program, like stress self-management, graded activity and exercise therapy (Fig. 3). These and other treatments target the abovementioned perpetuating factors. A detailed description of such a rehabilitation program is beyond the scope of this paper, but some issues in relation to the therapists’ and patients’ attitudes and beliefs are pointed out here.

First, it is important for clinicians to introduce these treatment components during the educational sessions, and to explain why and how the various treatment components are likely to contribute to recovery. Second, even though the scientific and medical community agrees that treatment should be biopsychosocial in nature, there is currently no gold standard for the rehabilitation of all chronic musculoskeletal pain patients. Effectiveness may depend on the personal characteristics of each patient i.e. his/her coping strategy with pain. For a heterogenic population like chronic low back pain no specific type of behavioral therapy is more effective than another, and there is little or no difference between behavioral therapy and group exercises for improving pain or depressive symptoms (Henschke et al., 2010). So active treatment should correspond with the patient’s individual coping strategies.

Third, exercise therapy is frequently encountered as a central component of the treatment of patients with chronic musculoskeletal pain. Exercise is an effective treatment for various chronic musculoskeletal pain disorders, including chronic low back pain.
(van Middelkoop et al., 2010), chronic whiplash associated disorders (Stewart et al., 2007; Teasell et al., 2010), osteoarthritis (Jansen et al., 2011), and fibromyalgia (Brosseau et al., 2008). Although the clinical benefits of exercise therapy in these populations are well established (i.e. evidence based), it should be integrated in a patient-tailored biopsychosocial rehabilitation program rather than applied as a stand-alone treatment (e.g. a time-contingent approach to exercise therapy should be applied). Interventions such as supervised or individualized exercise therapy and self-management techniques enhance exercise adherence (Jordan et al., 2010), and improve self-efficacy, which is one of the main predictors of treatment outcome for patients with chronic musculoskeletal pain (Miles et al., 2011).

Fourth, musculoskeletal therapists should be aware of the potential danger of applying pain contingent stabilization exercises in patients with chronic musculoskeletal pain. Rehabilitation strategies focusing on nothing else but stabilization exercises for those with chronic musculoskeletal pain contradict our current understanding of pain–motor interactions (Nijs et al., 2012), and do not comply with a biopsychosocial approach to chronic musculoskeletal pain. Indeed, stabilization exercises rely on a pure biomedical explanation for musculoskeletal pain. It is advocated to be cautious with stabilization exercises when patients have moderate or high fear of movement, as such therapy might trigger more (kinesio)phobic (“I have to keep my back always stable and I am therefore not allowed to move my back”) and catastrophic thoughts (e.g. “If I do not continuously activate my stabilization muscles, my back will be prone to severe injuries.”). Pain-contingent stabilization exercises are less suited for patients with a biomedical orientation, but time-contingent stabilization exercises can be integrated in a biopsychosocial treatment program, comprising of various components like stress management, education, and activity self-management.

4. Conclusion

Although many musculoskeletal therapists have moved on in their thinking and apply a broad biopsychosocial view with regard to chronic pain disorders, the majority have received a biomedical-focused training/education. Such a training shapes the therapists’ attitudes and core beliefs toward chronic musculoskeletal pain. Therapists should be aware of the impact of their own attitudes and beliefs on the patients’ attitudes and beliefs, which in turn affects patients’ behavior and treatment adherence. Self-reflection is the first and crucial step: musculoskeletal therapists can easily self-assess their attitudes and beliefs regarding chronic musculoskeletal pain using valid questionnaires. When such self-reflection reveals a biomedical orientation, the musculoskeletal physiotherapist is advised to consult relevant scientific literature addressing the biopsychosocial nature of chronic musculoskeletal pain, and to enter a training program for evidence-based management of chronic musculoskeletal pain. Knowing about and changing non-favorable cognitions of the therapist is likely to contribute to further improvement of therapeutic strategies and to an improved outcome (Laekeman and Basler, 2008). Still, a behavioral change of therapists is difficult to achieve and typically requires time.

Once the therapist holds evidence-based attitudes and beliefs regarding chronic musculoskeletal pain, assessing the patients’ attitudes and beliefs will be the natural next step. Such information can then be integrated in the clinical reasoning process, which results in individually-tailored treatment programs that specifically address the patients’ attitudes and beliefs in order to improve treatment adherence and outcome.

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