

From Acute Pain to Chronic Disability: Psychosocial Processes in the Development of Chronic Musculoskeletal Pain and Disability

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Overview

In the last decades, there has been a clear recognition of the importance of psychosocial factors in the explanation of chronic musculoskeletal pain. It is generally accepted that chronic musculoskeletal pain and disability has multiple causes, a view that is summarized in the so-called biopsychosocial models (Gatchel, Peng, Peters, Fuchs, & Turk, 2007). However, psychosocial factors have proven to be important predictors of chronic pain and disability already early on in acute and subacute stages of pain. A range of reviews conclude that factors, such as depression, anxiety, pain beliefs, catastrophizing, and coping behaviors, play a primary role in the transition from acute to chronic pain and disability (Linton, 2002; Main, Sullivan, & Watson, 2007; Nicholas, Linton, Watson, & Main, 2011). This supports the notion that psychosocial factors are preferably viewed as an integrated part of musculoskeletal pain, not only in the rehabilitation of chronic problems but also in prevention in the subacute stages.

The aim of this Chapter is to interpret the development of chronic musculoskeletal pain from a psychosocial perspective. From the framework of the biopsychosocial model, we review the psychosocial predictors and processes involved in the development of long-term disability. We highlight how an understanding of the psychology of pain may provide general guiding principles that can inform clinical management and prevention. Specifically, we focus on early identification, based on psychosocial factors, as a stepping stone for a systematic clinical approach to prevent chronicity. This chapter is written from the perspective that, seen through the eyes of the patient, persistent pain is a naturally taxing experience that drains resources and requires adaptation and flexibility. Pain is a stressor that draws an individual's attention and motivates an automatic search for solutions and relief from it. Also, due to its aversive nature, the pain promotes a surge of immediate avoidant and protective behaviors. Naturally, persistent pain leads to emotional and behavioral consequences. It is, therefore, from a psychosocial perspective, not surprising that dealing with persistent pain can prove to be problematic and may lead to a trajectory of long-term suffering and disability. Indeed, psychosocial factors have been shown to predict and drive unfavorable trajectories, and our knowledge of psychosocial processes can be used to prevent or alter suffering and disability.

A fundamental aspect of a preventive approach is early identification of patients who likely will

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develop chronic pain and disability. To this end, we will review psychosocial prognostic factors that have been shown to be related to persistent pain, long-term functional disability, and work absence. These prognostic factors provide us with the opportunity to use them as parameters for early identification so as to alter the trajectory toward chronic pain and disability. However, in order to be able to intervene, it is also important to understand the interrelationship between risk factors and the mechanisms that drive the process of chronification. In recent years, powerful psychosocial models have been developed to theoretically map the development of a chronic pain and disability problem. After introducing a generic model of the psychology of pain experience and behavior, we will focus on the most prominent models, such as the fear-avoidance model and the misdirected problem-solving model, because they have an ample evidence base. These models are good examples of how psychosocial factors can be related to one another to “make sense” of the process of chronification. These models also point out commonalities. Cognitive-behavioral processes, such as catastrophic worry and avoidance, are common to pain, but also other problems. While diagnostics are concerned with what is distinct between disorders, these so-called transdiagnostics seek to highlight the underlying processes that are common between comorbid problems (Harvey, Watkins, Mansell, & Shafran, 2004). Identifying common processes has clear clinical advantages because people in pain often also have other problems (e.g., insomnia, anxiety, and depression; Asmundson & Katz, 2009; Linton & Bergbom, 2011; Linton & MacDonald, 2008). Identifying shared underlying mechanisms may offer opportunities for intervention that could address these. Consequently, we will highlight some pertinent commonalities.

A final aim of this chapter is to translate the existing knowledge about psychosocial processes into guidance for intervention and prevention of the development of chronic pain and disability. Psychosocial factors that may affect pain outcomes are not yet routinely assessed by many treating clinicians, but they could be imple-

mented in practice in order to assist clinicians in allocating care to those that need it most. Several self-report screening instruments show predictive and clinical validity. The *Örebro Musculoskeletal Screening Questionnaire* will be described as one example of a screening instrument which can be used to identify individuals at risk for the development of chronic musculoskeletal pain and disability. Screening can also be used as a “stepping stone” for further, personalized intervention. We will conclude the chapter with guidelines for a systematic clinical approach to prevent chronicity. These guidelines can assist clinicians in their approach to their pain patients and can help structure and guide intervention steps.

Psychosocial Predictors and Mechanisms

While musculoskeletal pain is a very common problem, many episodes that people encounter denote minor problems, with low pain intensity and little disability (Linton & Ryberg, 2000; von Korf, 1999). Recovery is usually fast, especially with respect to regaining the working role. However, pain fluctuates over time, with frequent recurrences or exacerbations (Linton et al., 2005; Pengel, Herbert, Maher, & Refshauge, 2003). Thus, the course of pain is typically characterized by variability and change rather than by clear-cut distinctions in acute, subacute, and chronic stages of chronicity (van Tulder, Koes, & Bombardier, 2002). Moreover, although musculoskeletal pain is common, only a small minority of people (about 5–10 %) run the risk of developing a long-term disability including extensive functional problems, healthcare seeking, and sick listing (Dionne et al., 1999; Reid, Haugh, Hazard, & Tripathi, 1997). In sum, a small minority of the large number of people who experience pain develop a debilitating pain problem.

Much research has been devoted to understanding why recovery from an acute episode of musculoskeletal pain may be hampered, and psychosocial factors are consistently highlighted. There is good evidence, for example, that psychosocial factors play an important role in the

development of chronic back pain and disability, especially in the development of functional disability and sick leave (Burton, Tillotson, Main, & Hollis, 1995; Iles, Davidson, & Taylor, 2008; Pincus, Burton, Vogel, & Field, 2002). The key risk factors that emerge include emotional factors, such as stress, anxiety, and depressed mood; cognitive factors, such as beliefs, expectations, and catastrophic interpretations; and behavioral factors, such as passive, avoidant coping responses (Foster, Thomas, Bishop, Dunn, & Main, 2010; Nicholas et al., 2011). For example, clients who are depressed, or who have a history of depression, may have more difficulty dealing with pain (Ang et al., 2010; Linton & Bergbom, 2011). Also, it is apparent that individuals hold very different attitudes and beliefs about the origins and the seriousness of the pain that influence personal recovery expectations and other reactions to pain (Boersma & Linton, 2006a, 2006b; Main, Foster, & Buchbinder, 2010). Not least, catastrophic interpretations about pain have an important influence on the development of long-term pain problems, as well as poor treatment outcome (Flink, 2011). More so, combinations of these risk factors within individuals have been shown to increase the likelihood of long-term problems (Bergbom, Boersma, Overmeer, & Linton, 2011; Boersma & Linton, 2006a, 2006b; Westman, Boersma, Leppert, & Linton, 2011). Individuals with risk profiles, combining high levels of fear-avoidance beliefs, pain catastrophizing, and general emotional distress, show by far the highest levels of disability. These patterns and associated disability appear to be relatively stable over time, unaffected by the interventions provided (Bergbom et al., 2011; Westman et al., 2011). Of course, contextual factors in the workplace, especially those of a psychosocial nature (such as organizational support, job stress, and workplace communication), may represent barriers for return to work (Linton, 2004, 2005). In summary, all of these factors have been shown to predict long-term functional disability and sick leave in individuals who experience an acute episode, and they are strongly associated with disability in individuals with chronic pain.

A Generic Model of the Psychology of Pain

While numerous studies underscore the importance of psychosocial factors, most studies do not explicitly propose the mechanisms of *how* these variables might be related. In order to understand how acute pain could develop into a chronic problem, it is important to get a general picture of how pain is psychosocially processed. Figure 11.1 presents a model of the psychology of pain, where the role of attentional, cognitive, and behavioral processes in pain perception and pain behavior is integrated (Linton, 2005). This model underscores the fact that the interpretation of the pain stimulus (whether pain is appraised as harmful, unusual, or irrelevant) plays an influential role in directing attention and in steering behavior. For example, if a person interprets pain as a sign

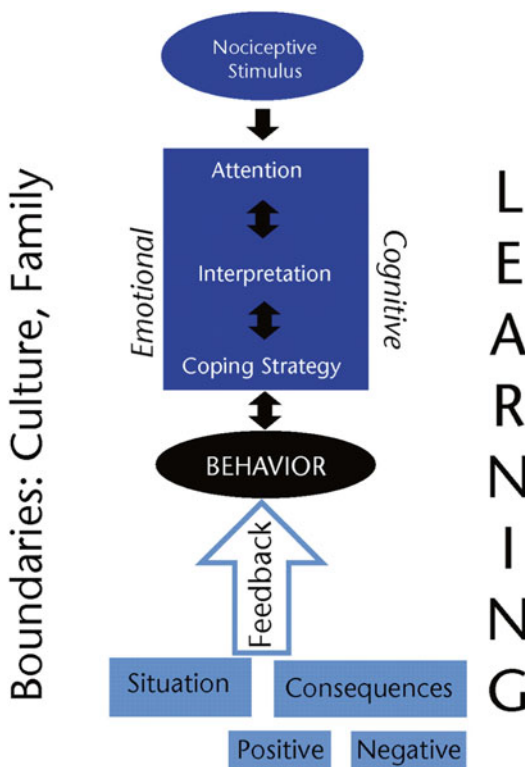


Fig. 11.1 Pain experience and behavior from a psychological perspective (Linton, 2005)

of serious harm, it is likely that attention will be turned inward (to the source of threat) and that actions will be taken to minimize or to eliminate damage, such as through resting and doctor visits. Likewise, the consequences of these behavioral actions play an instrumental role in directing future behavioral efforts. For example, if resting leads to a reduction or elimination of pain, resting will increase in frequency (i.e., it will be reinforced). On the other hand, if bending or twisting the back will increase pain, bending and twisting will decrease in frequency (i.e., it will be avoided). In the same fashion, if doctor visits result in extensive attention to diagnostic details or exclusively biomedical explanations of pain, this may reinforce futile searches for a “cure” and a delay of self-management strategies.

Learning processes are intricate and complicated, and they may occur at physiological, emotional, cognitive, as well as behavioral levels. For instance, classical conditioning may occur so that a certain, previously neutral, event comes to elicit a conditioned response of fear and heightened muscle tension in the back (Gatzounis, Schrooten, Crombez, & Vlaeyen, 2012; Vlaeyen & Linton, 2012). In this way, lifting a box may come to elicit a tension and fear reaction because of previous co-occurrence with pain. Besides prompting operant learning processes, such as avoidance, this reaction may also directly influence the experience of pain, through muscle tension and hypervigilance. Indeed, some experimental studies testify to the fact that neutral stimuli can come to elicit a muscle tension reaction after having been paired with aversive experiences, and it was also found that persons who experienced back and/or neck pain acquired this conditioned response faster than did pain-free controls (Flor and Birbaumer, 1994; Schneider et al., 2004). Moreover, the conditioned muscle tension was more resistant to extinction in the pain group than in the pain-free controls. This suggests that conditioned responses in anticipation of pain might play a role in the perpetuation of the pain experience. Not only do directly pain-related consequences operate on pain behavior, but so do social consequences, such as responses from spouses or other significant persons in the environment (Linton & Götestam, 1985; Leonard,

Cano, & Johansen, 2007; Romano et al., 1992). For example, in the study of Linton and Götestam, pain-free subjects were required to report their level of pain while undergoing a pain-inducing procedure. In one condition, participants were rewarded when they reported the same or an increased level of pain as compared to the previous trial. It was shown that participants increased their report of pain across these trials, even though the painful pressure was actually systematically decreased.

Lastly, the role of cognitive processes in learning is becoming increasingly recognized, especially in the conditioning of fear and in the relationship between fear and avoidance (see, for an overview, Goubert, Crombez, & Peters, 2004). For example, the conditioning of fear seems to be facilitated by verbal information about the co-occurrence of events. Cultural beliefs about, say, an invasive dental treatment and pain facilitate fearful apprehension for the dental treatment, even though it may not have been previously experienced. Moreover, the meaning of an aversive experience such as pain is not static, but varies between individuals and is dependent on information from different sources. For example, seeing a person in the nearby environment become severely disabled from back pain may, in some individuals, increase fear of back pain. Finally, people generate rules regarding the relationships between events, and these rules seem to govern behavior many times irrespective of actual contingencies between behavior and outcome. People with back pain may develop rules such as *One should never give up trying to find a cure for the back pain* while, at the same time, this persistence in finding a cure is unsuccessful and increases distress and frustration (McCracken, 1998; McCracken & Eccleston, 2003).

In summary, the psychology of pain ascribes an important role to cognitive processes, as well as experiential and observational learning. These processes are viewed as intricately linked to one another. Basic learning conditioning paradigms have started to include cognitive processes to explain, for example, why the valence of aversive stimuli differ across individuals and why people fear and avoid events that they have

never experienced. These processes, then, give important cues for understanding why and how some people develop a chronic back pain disability.

The Fear-Avoidance Model

In an attempt to describe the mechanism, whereby acute pain develops into a chronic pain problem more specifically, the “fear-avoidance model” was developed. The fear-avoidance model is a specification of the above-mentioned model. Both models stress the role of cognitions and behavior, but the fear-avoidance model is more explicitly tailored to explain a possible road to chronicity and has a specific and exclusive focus on the role of pain-related fear. This model is based on the work of Lethem, Slade, Troup, and Bentley (1983), Philips (1987), and Waddell, Newton, Henderson, Somerville, and Main (1993) and was expanded on by Vlaeyen and Linton (2000, 2012). It has been successfully applied to explain pain and disability in the subgroup of people experiencing a considerable amount of fear across a wide range of pain problems. While the exact sequence of interrelationships between the variables in the fear-avoidance models has been contended (Bergbom, Boersma,

& Linton, 2012; Wideman, Adams, & Sullivan, 2009), there is ample evidence supporting the validity of the model (Leeuw et al., 2007; Vancleef, Flink, Linton, & Vlaeyen, 2012; Vlaeyen & Linton, 2000, 2012).

In summary, the model (see Fig. 11.2) poses that, for most people, pain is appraised as an undesirable and unpleasant but, nonetheless, a nonthreatening experience (“no fear”). This judgment makes it likely that the individual engages in appropriate behavioral restrictions after injury, but also that painful movements are gradually confronted. Gradual confrontation of painful movements is then thought to increase the likelihood of healing and recovery. On the other hand, in a significant minority of people confronted with pain, the pain experience is interpreted as a serious threat. In other words, these individuals appraise the pain in a catastrophic way. Tendencies to engage in catastrophic thinking about pain are central in this model and are thought to be the result of multiple influences, such as predisposing factors (e.g., negative affectivity), as well as environmental influences (e.g., threatening illness information and observational learning). A catastrophic interpretation of pain is thought to lead to pain-related fear, such as fear of the pain itself or fear of (re) injury. Fear, in turn, promotes hyper-vigilance to pain and behavioral avoidance, fueled

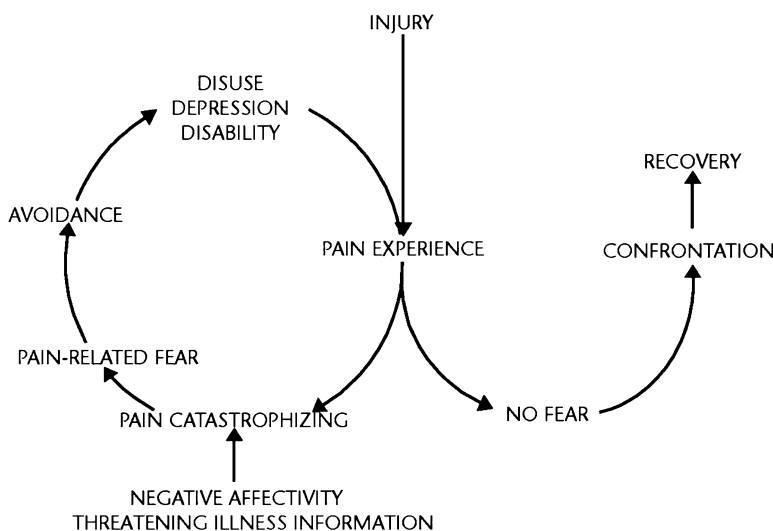


Fig. 11.2 The fear-avoidance model of pain (adapted from Vlaeyen & Linton, 2000)

by beliefs that activity may cause damage and will exacerbate the pain. Lastly, long-term avoidance of activity can have a negative impact on physiological processes, and it can result in a more general withdrawal from positive reinforcers, leading to mood disturbances such as irritability, frustration, and depression. Both depression and disuse are associated with decreased pain thresholds and tolerance levels and might, in that way, promote the painful experience.

Common Psychosocial Processes Across Models

While the fear-avoidance model places a specific emphasis on the cognitive (negative thoughts such as catastrophizing) and behavioral (avoidance) processes in relation to pain-related fear, these processes may, in fact, cut across most psychosocial and somatic disorders, where individuals are confronted to deal with (persistent or recurrent) aversive inner states, such as anxiety and depression, or health-related complaints such as fatigue and sleep problems (Harvey, 2008). These processes have been coined *transdiagnostic processes*, and they appear to have in common the fact that they function to regulate negative-affective experiences. Indeed, recently, these processes have been put forward as a possible explanation of the high degree of co-occurrence that has been found between pain and anxiety disorders (Asmundson & Katz, 2009; Sharp & Harvey, 2001). Specifically, there is evidence that relationships between pain and emotional disorders can be explained by shared vulnerability, such as anxiety sensitivity, and by maintaining cognitive and behavioral factors, such as negative cognitive appraisal, worry, covert, and overt avoidance (Asmundson & Katz, 2009).

Recent developments in pain psychology research extend the possible emotional regulatory function of cognitive and behavioral processes by emphasizing contextual factors (Hadjistavropoulos et al., 2011). For example, while the fear-avoidance model highlights the close interrelationship among catastrophizing, fear, and avoidance behavior, another model

(the *communal coping model*) highlights how catastrophizing may perform a regulatory function in the interpersonal and communicative context. In this model, an important function of catastrophizing is thought to be to elicit support and reassurance. Several studies have confirmed that people high on catastrophizing are more interpersonally expressive concerning their pain, possibly with the function to seek support and reassurance and, through this, find emotional relief (Cano, Leong, Williams, May, & Lutz, 2012; Thibault, Loisel, Durand, Catchlove, & Sullivan, 2008). Eccleston and Crombez (2007) presented a reorientation of the fear-avoidance and communal coping models that attempts to take the functions of catastrophizing into account. Their “misdirected problem-solving” model largely reframes pain catastrophizing as worry and focuses on the function of worry in the context of persisting pain. While they describe worry as a generally adaptive mental problem-solving process, they stress that, in the context of chronic pain, worry can become maladaptive and “misdirected.” Specifically, if individuals define their persisting pain as a biomedical problem that needs to be cured, this narrow problem definition, and the consequent goal orientation and pursuit of pain relief, may actually increase the likelihood that individuals get “stuck” in a loop of mental, as well as behavioral, problem-solving. This loop is easily characterized by failure because the goal is diffuse or, in fact, impossible to attain. In the end, a situation may arise where an individual is trapped in a state where, on the one hand, progress toward a goal is not being made while, on the other hand, the individual is not able to abandon the goal. This may then lead to negative, persistent, and unconstructive worry in the form of pain catastrophizing, as well as behavioral avoidance. In other words, besides a threat appraisal and an interpersonal mode of communication, pain catastrophizing in this framework is seen as perseverant and inflexible cognitive attempts to solve an insoluble problem (Aldrich, Eccleston, & Crombez, 2000).

Indeed catastrophizing can, in general, be conceptualized as a form of negative repetitive thinking about a current concern which is

abstract, intrusive, and difficult to disengage from (Flink et al., 2013). This account of the function of repetitive thought in the form of worry, behavioral avoidance, and safety seeking seems indeed shared across a wide range of problem areas (Mansell, Harvey, Watkins, & Shafran, 2008; Sharp & Harvey, 2001; Smith & Alloy, 2009; Watkins, 2008). These transdiagnostic processes may be powerful drivers of the chronification process, and they have clear implications for clinical management.

How Can Knowledge on Psychosocial Processes Influence Management?

Improving our understanding of the mechanisms that underlie the development of chronicity has implications for clinical management and prevention. The importance of emotional, cognitive, and behavioral factors in the developmental process, from acute pain to a chronic disability, implies that assessing as well as addressing these factors is pivotal. However, while psychosocial theories and models about pain have provided a better understanding about the development of a chronic problem, they are abstract, and the immediate implications for clinical management may be less clear. Therefore, Table 11.1 summarizes some important general implications that can be extracted from the above account of psychosocial processes and models of pain experience.

As highlighted in Table 11.1, the possibility for prevention of chronicity would be enhanced if the psychosocial factors that impact on pain outcomes would be routinely assessed when they are already in the acute and subacute stages of development. In several ways, early screening for risk could play a key role in secondary prevention. First, it may be beneficial in directing preventive interventions, specifically to those who need it the most. Second, it might direct attention to those factors that are most pertinent and modifiable. It would help clinicians and researchers to target and develop the content of the intervention to the actual problems, fueling the development of a specific individual. Third, it might provide

primary care facilities that often do not have the resources for assessing psychosocial factors with a simple routine for ensuring assessment. Because psychosocial factors have been shown to predict the development of future pain and disability problems, they form the basis in screening procedures (Nicholas et al., 2011). However, note that many other factors (e.g., specific work-related factors, such as organizational support, job stress, and perceived workplace communication) predict the development of chronic (work) disability and may be included in screening procedures, not in the least in a return-to-work context (Shaw, van der Windt, Main, Loisel, & Linton, 2009). Choice of a screening tool may well be dependent on the purpose and setting. In order to aid in the assessment of psychosocial factors, as well as to communicate with patients and implement early intervention, the *Örebro Musculoskeletal Pain Screening Questionnaire* (ÖMSPQ) was developed and psychometrically tested (Ektor-Andersen, Örbaek, Ingvarsson, & Kullendorff, 2000; Hockings, McAuley, & Maher, 2008; Hurley et al., 2000; Hurley, Dusoir, McDonough, Moore, & David Baxter, 2001; Melloh et al., 2009). About 80 % of the people presenting with a (sub) acute back pain problem can be correctly classified using this screening instrument. This Questionnaire is a self-administered screening instrument for individuals with acute or subacute musculoskeletal pain, containing 25 (Boersma & Linton, 2002) or 10 (Linton, Nicholas, & MacDonald, 2011) questions, covering the most important psychosocial risk factors, including questions such as work-related variables, coping, function, stress, mood, and fear-avoidance beliefs. Table 11.2 presents the short, ten-item version. The ÖMSPQ screening tool could, in addition to providing a rough estimate of prognosis, be used to aid in clinical management and a more precise targeting of treatment. For example, while the scoring pattern can give a risk estimate, it can also be used to discuss specific problems with the patient and identify individual problem areas and planning intervention strategies.

The ÖMSPQ is but one example of several screening instruments that have been developed in recent years to aid clinicians in clinical judgment

Table 11.1 Guiding principles relating psychosocial factors to the treatment of pain

Number	Guiding principle	Clinical implication
1	Psychosocial factors that may impact pain outcomes are not routinely assessed by many treating clinicians	Better methods of screening and early intervention are needed to improve feasibility and utility in usual care settings
2	Persistent pain naturally leads to emotional and behavioral consequences for the majority of individuals	Psychosocial concepts of learning can be useful to provide empathy and support without reinforcing pain behavior
3	Clients who are depressed or have a history of depression may have more difficulty dealing with pain	A brief assessment of mood symptoms should be part of routine screening and intake procedures for pain conditions
4	Persistent pain problems can lead to hypervigilance and avoidance, but simple distraction techniques are not enough to counter this	Clinicians should avoid inadvertent messages that escape or avoidance from pain is necessary in order to preserve function. Instead, show understanding of the problem and support reactivation in the context of the presence of pain
5	Individuals hold very different attitudes and beliefs about the origins of pain, the seriousness of pain, and how to react	Individual differences in pain beliefs and attitudes should be assessed and taken into account in treatment planning
6	Personal expectations about the course of pain recovery and treatment benefits are associated with pain outcomes	Providing realistic expectations (positive, but frank and not overly reassuring) may be a very important aspect of treatment
7	Catastrophic thinking about pain is an important marker for the development of long-term pain problems as well as for poor treatment outcome	Clinicians should listen for expression of catastrophic thoughts and offer less exaggerated beliefs as an alternative. A brief assessment might be part of routine intake procedures
8	Personal acceptance and commitment to self-manage pain problems is associated with better pain outcomes	Overattention to diagnostic details and biomedical explanations may reinforce futile searches for a cure and delay pain self-management
9	Psychosocial aspects of the workplace may represent barriers for returning to work while pain problems linger	RTW planning should include attention to aspects of organizational support, job stress, and workplace communication
10	With proper instruction and support, psychological interventions can improve pain treatment outcomes	Psychosocial approaches can be incorporated into conventional treatment methods, but this requires special training and support

These provide guidance for a patient-centered approach during assessment, treatment planning, and implementation (based on Linton & Shaw, 2011)

and decision making when it comes to treatment allocation. For example, the *Startback Screening Tool* was specifically designed to classify primary-care patients into categories based on low, medium, and high levels of risk for future disability (Hay et al., 2008; Hill et al., 2008). This screening tool consists of nine items, covering the constructs of bothersomeness, referred leg pain, comorbid pain, disability, catastrophizing, fear, anxiety, and depression. The low-risk stratum consists of patients with little or no self-reported indicators for poor outcome. The medium-risk stratum consists of patients who, while reporting high levels of physical and psychosocial risk fac-

tors, display low levels on psychosocial risk factors. The high-risk stratum consists of patients with high levels of psychosocial prognostic indicators with or without physical or psychosocial indicators. The *Startback Tool* has been successfully used to stratify the amount of treatment and resources allocated to the degree of risk that patients present with (Hill et al., 2008). Application of treatment levels based on this classification has aided in preventing low-risk patients from getting over treated and promoted, in this way, cost-effective care (Hill et al., 2011). This stresses that it is not just important to identify those at risk but also those not at risk.

Table 11.2 Items in the short version of the Örebro Musculoskeletal Pain Screening Questionnaire (Linton et al., 2011)

Item	Concept
1 How long have you had your current pain problem?	Pain
2 How would you rate the pain that you have had during the past week?	Pain
3 <i>Please circle the one number which best describes your current ability to participate in each of these activities</i> I can do light work for an hour	Self-perceived Function
4 <i>Please circle the one number which best describes your current ability to participate in each of these activities</i> I can sleep at night	Self-perceived Function
5 How tense or anxious have you felt in the past week?	Distress
6 How much have you been bothered by feeling depressed in the past week?	Distress
7 In your view, how large is the risk that your current pain may become persistent?	Return to work expectancy
8 In your estimation, what are the chances you will be working your normal duties in 3 months?	Return to work expectancy
9 An increase in pain is an indication that I should stop what I'm doing until the pain decreases	Fear-avoidance beliefs
10 I should not do my normal work with my present pain	Fear-avoidance beliefs

The Tool's short and concise nature makes it economical to administer in busy clinical settings. Comparisons between the ÖMPSQ and Startback have shown that there is a high correlation (0.80) between the two screening tools (Hill, Dunn, Main, & Hay, 2010). There was great overlap in identification of low-risk patients, but the Startback screening allocated fewer people to the high-risk stratum. All in all, the specific choice of screening instrument may depend on the principle objective of screening. In fact, screening can be used as a first step in a systematic clinical approach to prevent pain and disability. Table 11.3 provides an overview of six steps that can aid clinicians in systematically

Table 11.3 Six systematic steps that can aid clinicians in managing pain problems

Recommendation	Clinical description
1. Identification of people who likely will develop disability	Use a brief screening interview and/or screening tool to sort patients likely to develop disability from those unlikely to develop such a problem. This procedure may be "over inclusive" to ensure identification and should take little resources
2. Further assessment of patients aimed at identifying specific mechanisms driving the development of disability	Utilize existing psychosocial knowledge and assessment routines to isolate mechanisms driving or maintaining the disability. Specific factors, such as fear-avoidance beliefs, catastrophic worry, and depressed mood, should be identified so that targets for intervention can be based on them
3. Coordinate assessment with other professionals	If further medical, organizational, ergonomic, or other assessments are being conducted, coordinate with these professionals in order to develop a consistent approach. This includes the information that will be presented to the patient as well as the development of the intervention
4. Engage the patient	Use client-centered communication to engage the patient. Develop clear goals that are important to the patient. Provide clear information about the results of the assessment and discuss what it means for intervention
5. Tailor the intervention to address the mechanisms	Rather than providing a standard "one-size" intervention, select methods that target the identified mechanisms and are evidence based
6. Test the intervention and recycle if necessary	Evaluate the intervention objectively with appropriate measures (e.g., of activity levels, pain intensity, and distress), as well as subjectively via an interview with the patient. Recycle any parts that are not working to further tailor the intervention to the patient's needs

managing pain problems. In this system, screening has the purpose to roughly identify those at risk. Using knowledge of psychosocial mechanisms, this rough identification is then recommended to be followed up by further assessment in order to identify the specific processes and interactions at the individual level (Linton & Nicholas, 2008). This is important as, while there are commonalities across individuals on dimensions of cognition, emotion, and behavior, there are also personal intricacies that require individualization. A tailored treatment that targets these personal concerns is then provided. Of course, it is important that this treatment is coordinated with other professionals and, not in the least, a client-centered communication is important to validate and engage the patient. Thorough knowledge of basic psychosocial processes that operate in pain problems can give guidance to a personalized problem formulation. It provides an opportunity to understand and make sense of a patient's pain experience and to communicate this understanding to patients so as to validate their experience and actively engage them in treatment.

Conclusions

In conclusion, the evidence suggests that we can identify who is at risk to develop a long-term pain problem. Psychosocial factors are important predictors of unfavorable trajectories. Some powerful theoretical models have been developed in recent years that have a strong evidence base, such as the fear-avoidance model and the misdirected problem-solving model. These models assist in understanding why and how the development from an acute pain to a chronic pain problem may unfold. Not the least, these models underscore a set of psychosocial processes that are shared, such as catastrophic worry, avoidance behavior, and the (misdirected) pursuit for a medical solution to pain. These cognitive-behavioral processes may function to regulate the various negative emotions that are triggered by the pain experience. While these reactions are natural, they may inadvertently come to play an important role in catalyzing the development toward a

chronic pain problem. On the other hand, while there are commonalities across individuals in pain on dimensions of cognition, emotion, and behavior, there are also individual intricacies that call for individualization of treatment. It is important to first identify the specific processes that operate on the individual level and then to target these with appropriate intervention. Lastly, there is a need to translate the above ideas into interventions for widespread application in the clinic. Psychosocial interventions may range from simple communication techniques to advanced cognitive-behavioral methods that require considerable training and supervision. While screening is one important aspect, and can be used a "stepping stone" for preventive intervention, it may involve considerable professional competency to apply psychosocial interventions. Future challenges include issues such as the specific content of treatments that can be provided to target the individual problem profile, as well as the skills that are necessary to successfully apply these interventions.

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