

Depression and Anxiety in Pain

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SUMMARY POINTS

- Mood disorders, especially depression and anxiety, play an important role in the exacerbation of pain perception in all clinical settings.
- Depression commonly occurs as a result of chronic pain and needs treating to improve outcome measures and quality of life.
- Anxiety negatively affects thoughts and behaviours which hinders rehabilitation.
- Anxiety and depression in acute hospital settings also negatively affect pain experience and should be considered in both adults and children.
- Poor pain control and significant mood disorders perioperatively contribute to the development of chronic postoperative pain.

Introduction

Pain concepts have moved radically away from the early nociceptive Cartesian principle, where a specific lesion in the body is experienced as pain by the brain. This has been replaced by the widely accepted biopsychosocial model, where tissue damage, psychology and environmental factors all interact to determine pain experience. The IASP's definition of pain as "an unpleasant sensory or emotional experience associated with tissue damage..." further emphasises the significant role of mood and emotions for pain perception. Among these, depression and anxiety have been implicated as important contributors to the experience of pain, and have been extensively studied.

Depression

Depression is characterised by a pervasive low mood, loss of interest in usual activities and diminished ability to experience pleasure. Within this definition there exists a whole spectrum of severity, symptoms and signs together with their classifications. The DSM-IV (Diagnostic and Statistical Manual) is a common diagnostic classification system for psychiatric conditions and is also used for research, insurance and administration¹. A common prerequisite for diagnosis of depression or other psychiatric disorders is that any symptoms experienced should result in clinically significant distress or impairment of social, occupational, or other important areas of functioning.

The Scale of the Problem

The association of chronic pain with depression has been of great interest in the past few decades. Chronic musculoskeletal pain patients have higher depression than individuals without pain in a general population study². A third of patients in a pain clinic population had 'major depression' according to the criteria of the Diagnostic and Statistical Manual (DSM IV) following structured interviews³. The presence of pain can make recognition of depression more difficult, even though increased severity of pain worsens depressive symptoms⁴.

Diagnostic and Assessment Issues

The association between depression and chronic pain, though widely accepted, is marred by diagnostic difficulties. In research for 'depression' various definitions exist in studies, leading to a variety of assessment methods, including self report instruments, chart reviews and structured or unstructured clinical interviews. Many studies relating to depression and chronic pain include heterogenous groups of patients with different chronic pain conditions and unspecified diagnostic criteria for depression. This clearly questions the validity of studies.

In the clinical setting many tools exist for the assessment of the severity and nature of depression. In chronic pain, the Zung Self-Rating Depression Scale (SDS), Beck's Depression Inventory (BDI) and Depression, Anxiety and Stress Scale (DASS) are commonly used. The SDS and DASS in particular, have shown high internal consistency and validity in chronic pain patients. However many criteria for depression, like fatigue, insomnia and weight change,

are symptoms attributable to chronic pain itself. The DSM-IV places emphasis on weight loss, appetite change and fatigue on diagnosis, and the Beck's Depression Inventory and Zung Self-Rating Depression Scales also include a substantial number of such somatic items. Such 'criterion contamination' may lead to overestimation of depression. The DASS excludes such somatic items and is thought to provide a more accurate assessment of depression, especially in chronic pain patients⁵. Another questionnaire designed specifically for chronic pain patients is the Depression, Anxiety and Positive Outlook Scale (DAPOS). This also contains no somatic items and includes measures of optimism⁶.

These points illustrate the unique difficulty present in the study of depression in chronic pain patients. It is not surprising that meta-analyses or systematic reviews in this area are relatively scarce. Just as depression is not a single entity but a spectrum, chronic pain patients are also a very heterogeneous group of patients. All these have to be borne in mind when reviewing papers and studies of depression in chronic pain.

Depression and Pain: Chicken and Egg?

Physiological similarities exist between chronic pain and depression. For example, noradrenaline and serotonin involved in the pathophysiology of depression also coincide with the anatomical 'descending inhibition' of pain perception. These two neurotransmitters act in the limbic system and periaqueductal areas to modulate incoming pain stimuli. Antidepressants working through these neurotransmitters are also analgesic regardless of the presence of depression.

This leads to the question of whether depression follows the establishment of chronic pain or whether chronic pain is a manifestation of a form of depression or a spectrum thereof. Some evidence exists for both views. For example, patients with preexisting depression were found to be more likely to develop chest pain and headaches in a three year period⁷. Conversely a review of forty studies supported the notion that depression is a consequence of protracted pain⁸. The 'diathesis-stress' model for this conundrum is now growing in acceptance which supports that depression is a sequelae of chronic pain. Accordingly people with a psychological predisposition (diathesis), superimposed with the stresses of chronic pain go on to develop clinical depression.

Chronic pain is also associated with anxiety disorders (discussed below), somatoform disorders, substance use disorders, and personality disorders. As with depression, pre-existing, semidormant characteristics of the individual before the onset of chronic pain are activated and exacerbated by the stress of chronic pain, eventually resulting in diagnosable psychopathology⁹. Psychosocial elements which predict chronic pain and disability (yellow flags) used in clinical practice may well fit into this construct.

Yellow Flags are psychosocial factors that increase the risk of developing or perpetuating long-term disability and work loss associated with low back pain. Such include:

- **Attitudes and Beliefs** about back pain. The belief that pain is harmful or disabling resulting in fear-avoidance behaviour.
- **Behaviours.** Use of extended rest, disproportionate 'downtime'.
- **Compensation Issues.** Lack of financial incentive to return to work.
- **Diagnosis and Treatment.** Health professional sanctioning disability, not providing interventions that will improve function.
- **Emotions.** Fear of increased pain with activity or work.
- **Family and Work.** Over-protective partner/spouse, emphasising fear of harm or encouraging catastrophising. Manual work and job dissatisfaction.

The Costs of Depression in Pain

Social functioning, work and physical activities are all decreased whilst utilisation of medical services increases if depression coexists with pain¹⁰. Motivation and compliance with treatment is also affected¹¹. Such negative outcomes leave little doubt as to the quality of life of such patients. Clearly pain and depression should not be seen as separate dimensions but as interactive in nature. Attempting to treat pain without considering depression is likely to be a futile venture.

Anxiety in Chronic Pain

Anxiety is a physiological state characterized by cognitive, somatic, emotional, and behavioral components producing fear and worry. Anxiety is often accompanied by physical sensations such as heart palpitations and shortness of breath whilst the cognitive component entails expectation of a diffuse and certain danger. As with depression, anxiety disorders are categorised in the DSM-IV, with subtypes including generalised anxiety disorder (GAD), panic disorder and phobias. GAD is the most commonly diagnosed anxiety disorder in chronic pain populations. The coexistence of pain and anxiety is perhaps not surprising: Both signal impending danger and the necessity for action which confer survival value to the individual.

Anxiety disorders are second only to depression in psychological comorbidity in chronic pain populations. Whilst anxiety is a normal response in everyone, clinical anxiety results in increased intensity and prolongation of the feelings of dread that interfere with normal functioning. Measurements of anxiety with chronic pain also show a strong association: as with depression. One such study showed a doubling in the prevalence of anxiety disorders compared to the general population¹². Anxiety is thought to be an important mediator in the cognitive constructs of catastrophising, hypervigilance and fear avoidance in the exacerbation of pain experiences.

- **Catastrophising** is 'dwelling on the worst possible outcomes'. It is associated with higher disability and pain severity and is an important cognitive measure and prognostic indicator in chronic pain patients.
- **Hypervigilance** in pain is the increased attendance to pain and decreased ability to distract oneself from pain-related stimuli.
- **Fear avoidance** is the avoidance of movement or activities based on fear of pain or re-injury. This is especially counterproductive for physical rehabilitation and is termed 'kinesophobia'.

Measurement of Anxiety in Pain

As with depression many measures of anxiety states exist. The State-Trait Anxiety Inventory questionnaire is a well-validated tool used in general psychology but has also been used in pain clinics. For chronic pain, more specific measures of anxiety-related to cognitive and behavioural variables have been designed. Such an instrument is the Pain Anxiety Symptoms Scale (PASS) which measures behavioural responses to pain¹³. The Fear of Pain Inventory measures degree of fear in hypothetical pain inducing situations¹⁴. These are more useful than general anxiety measurements and give more specific information in relation to the pain experienced. The DASS and DAPOS used for depression also measure anxiety.

Anxiety and Depression Coexist

Despite their differences in symptoms and classification, depression and anxiety seem to exist concurrently to a surprisingly frequent extent. In psychiatry, terms like 'agitated depression' have been coined for a state of depression that presents as anxiety which includes restlessness, insomnia and nonspecific panic.

Even mild anxiety symptoms can have a major impact on the course of a depressive illness. Depressed or bipolar patients with lifetime

panic symptoms have significant delays in remission for depression¹⁵. To this end, the presence of both depression and anxiety make treatment of pain more challenging but the presence of one should alert rather than deter the diagnosis of the other.

Treatment of Depression and Anxiety

Mainstays of treatment of depression and anxiety are psychological and pharmacological. Whilst the scope of these is well beyond this article, it is worth noting that cognitive behavioural therapy, which addresses depression and anxiety, has very good evidence for efficacy in chronic pain patients¹⁶. Important concepts of CBT are also incorporated into Pain Management Programs for delivery to patients with different types of pain.

Depression and Anxiety in Acute Pain

Hitherto depression and anxiety have only been discussed in a chronic setting. Current multidimensional concepts of pain are equally important in the acute setting. Apart from the degree of surgical insult to tissue, psychological and environmental factors influence acute pain experience to a high degree¹⁷.

Preoperative anxiety is correlated with higher pain intensity postoperatively for a variety of operations. In the hospital setting, anxiety is worsened by sleep deprivation in the postoperative period due to interruptions in the wards for observations, other patients and medications. This vicious circle is exacerbated by fear of complications, loss of control and helplessness. Admission to hospital and having an operation is a highly stressful event for most and that is often forgotten by professionals who are frequently involved in perioperative care. Preoperative depression also increases pain intensity, opioid requirements by any route and number of demands from the PCAS (Patient controlled analgesia system) in the postoperative period. Higher levels of dissatisfaction with analgesia also occur if depression coexists¹⁸.

Treatment Strategies

Strategies used include procedural and sensory information, relaxation and attentional strategies, hypnosis and cognitive behavioural treatments. The use of anxiolytic drugs on the morning of procedure or hypnotics the night before are also widespread.

Combination of procedural information of the surgery together with expected sensations felt by the patient postoperatively have yielded Level I evidence (evidence obtained from at least one properly designed randomised controlled trial) for benefits on pain perception¹⁹. Another meta-analysis on giving information regarding the conduct of surgical treatment showed decreased hospital stay²⁰.

Relaxation techniques involve teaching patients calming methods, including breathing techniques, self hypnosis and muscle relaxation.

This has been verified in a meta-analysis providing Level I evidence for reducing pain as well as blood pressure and pulse²¹. Hypnosis and attention diversion from pain has also garnered evidence for effectiveness. A 'moderate to large' effect size on reduction of pain has been shown in yet another meta-analysis of hypnosis, in both laboratory and clinical participants²².

Psychological interventions for children are also increasingly recognized and being used. Cognitive behavioural strategies are shown to be effective in procedural related pain in children and adolescents²³.

Techniques used involve breathing exercises, distraction and incentives. These techniques involve psychologists, parents and medical staff.

Even in the intensive care, mood disorders need attention. Mechanically ventilated patients without surgery or trauma are known to experience pain, which leads to increased anxiety and adverse physiological effects²⁴. Analgesia and sedation thus need to be adjusted with evaluation of pain in mind.

There is very good evidence to implicate mood disorders, especially anxiety, in worsening pain experience in acute surgical or procedural situations. Evidence extends to oncology and paediatric patients also. As a basic strategy, careful explanation and allaying of fears should be practiced by any healthcare professional involved in interventions. This can be combined with some of the psychological techniques described above. There is a greater wealth of high level evidence for mood disorders in acute compared to chronic pain. Shorter time frames of studies and greater numbers of suitable patients for recruitment are contributory factors to this.

Bridging the Gap

What causes acute pain to become chronic? Many patients who do develop chronic pain can pin down an episode of acute pain as a precipitant²⁵. Some risk factors are known. Surgical procedures like amputation, thoracotomy and radical mastectomy are notorious for causing chronic pain postoperatively. Psychosocial contributors like 'psychological vulnerability' preoperatively, and depression and anxiety postoperatively have been implicated²⁶. Treatment or attenuation of anxiety and depression could thus be a vital component of perioperative pain control when considering longer term outcomes. Increased pain intensity is also a risk factor for chronic pain development. Treating acute pain is therefore vital for preventing chronicity.

Conclusion

Pain is one of the commonest symptoms for which patients seek medical attention. Depression and anxiety symptoms are important to consider not only in primary healthcare settings and pain clinics but also in hospital and palliative care settings. They must be borne

in mind not only in adults but in children too. The education of patients of the role of depression and anxiety in pain is paramount, but awareness of these issues by healthcare professionals in all disciplines is the preceding and necessary step for good quality patient management.

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