Psychological aspects of pain

Robert G Large

'An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage'.

This is the definition of pain accepted by the International Association for the Study of Pain (IASP) and it is a modification of Merskey's original definition. The striking characteristic of this definition is that it does not tie the experience of pain to a stimulus, thus making pain a wholly subjective issue. It is for the individual who has the experience to determine whether pain is present or not. It is not for us as neurophysiologists, psychologists, or rheumatologists to decide if another person is in pain, but it is entirely that person's prerogative to tell us what is being experienced. We may be able to judge by history, examination, or investigations if the experience is likely to be linked to a noxious stimulus, but we cannot argue with the individual's subjective experience. If the patient says there is pain, then there is pain—unless he or she is lying about his or her own experience. So, provided the patient is telling the truth, we must accept that pain is a matter for the patient and no one else to judge.

This ultimate reliance on subjective self report makes pain one of the most tantalising and challenging of all symptoms requiring consideration.

Measurement

Unlike so many other symptoms, for which a correlate can be found on physical examination, pain can frequently be experienced without obvious physical signs. Acute, severe pain may be accompanied by autonomic changes, but there is no reliable way of gauging the severity, or even the presence, of pain by physical examination or psychophysiological measurement.

As a consequence, all of the useful measures of pain are ways of formalising and quantifying the person's subjective description. These start with simple methods of quantifying severity, as in the variety of 'box scales' and visual analogue measures, which are simple to use and can monitor change over time for the same individual. A simple measure of intensity can be usefully complemented with an adjectival description, which is formalised in the McGill Pain Questionnaire. Research on this instrument suggests that there may be a different significance attached to words that are sensory descriptors, as opposed to words which have 'evaluative' or 'affective' connotations.

Another approach that is useful clinically has been to use body drawings that enable the patient to show the sites and areas of the body where pain is experienced. A combination of a measure of intensity, an adjectival description, and a pain drawing are suggested as a useful set of basic data by which the subjective experience of pain can be measured.

In day to day clinical work, it can be quite useful to obtain estimates of pain at 'present', at 'worst', and at 'least' severity. These give an immediate profile of the range of fluctuation in pain, the time spent in severe pain, and whether the pain is continuous or intermittent. Perceived severity can be some guide to the need for action. It is not unknown for clinicians to rush in with interventions, when the severity and duration of pain are actually quite modest. Sometimes it may be useful to know how much pain the patient believes would be bearable. This provides some insight into the expectations of benefit from treatment.

There are no psychological tests that reliably distinguish between 'psychogenic' and 'somatic' pain, and anyone looking for such a test has misunderstood the nature of pain and the needs of patients with pain. The tests that are helpful are those which clarify the degree of distress as indicated by anxiety or depression, the tendency to somatise distress, as shown in questionnaires on somatic preoccupation and illness behaviour, and the degree of disability. These give a multidimensional profile, perhaps best modelled by the Westhaven/Harvard instrument or by Strong's multifactorial assessment.

The psychological effects of pain

Acute pain is nearly always a cause for anxiety and avoidance, as befits its function as a warning mechanism. Children learn to avoid stimuli they associate with pain, as do adults. Physiotherapists are very aware of this issue when they engage patients in movement and remobilisation after injury, whether accidental or surgical. This natural and expected response is a potent cause of continuing pain and disability. Many people with chronic musculoskeletal pain avoid activity they believe will aggravate their pain. The result is de-conditioning, loss of fitness, loss of confidence, and increasing disability. In that most enigmatic of all pain syndromes—reflex sympathetic dystrophy, now called 'complex regional pain syndrome'—the avoidance of movement and stimulation may be central to the pathophysiology of the disorder. Much of the
anxiety, fear and ‘neurotic’ behaviour of such patients becomes understandable when seen as an attempt to avoid pain.\textsuperscript{13} Our task in treatment and rehabilitation is to convince patients of the need to move. Hence the development of behavioural programmes based on operant conditioning theory, as pioneered by Wilbert Fordyce.\textsuperscript{14}

Chronic pain is associated with a range of psychosocial problems that have been described as part of the ‘chronic pain syndrome’.\textsuperscript{15} Arguments continue about the relative importance of psychosocial factors that may sensitize patients to the development of a chronic pain syndrome, versus the psychosocial sequelae of the pain itself. There can be no doubt that pain can and does cause a concatenation of adverse psychosocial effects.\textsuperscript{16} Patients describe changes in relationships with others and with doctors, a sense of alienation within the family, problems with depression and anger, and a loss of bodily integrity and of a sense of self. Pain is experienced as an added burden to the normal demands of living, which saps energy and often cannot be talked about because others have grown tired of listening. Some patients reach the extremes of helplessness, hopelessness, and suicide.\textsuperscript{17} There are now many studies documenting the development of such changes after the onset of pain, and a number of studies showing a reversal of such trends when pain is relieved. This does not, however, mean that all treatment should be directed at pain relief. Repeated, failed attempts at definitive treatment or cure constitute one of the more destructive experiences for people with chronic pain.\textsuperscript{18} There is also little evidence to support the idea that simply providing powerful analgesia is enough. Extant studies on the efficacy of chronic opioid use for intractable pain do little to raise any hope of a breakthrough in treatment.\textsuperscript{19}

Treatment programmes, therefore, need to be comprehensive, with an emphasis on increasing activity, education about pain, and the utilisation of cognitive-behavioural techniques for pain management. This approach, combined with appropriate management of drugs, is well validated in the literature on outcome.\textsuperscript{20, 21}

Psychiatric disorders in chronic pain

Studies investigating the presenting symptoms of patients attending both medical and psychiatric outpatient clinics have found that pain is a frequent presenting complaint in both these groups of patients.\textsuperscript{22} Pain, therefore, is as likely to be a problem for people with psychiatric disorders as it is for those with general medical problems.\textsuperscript{23}

There are now a number of published studies that have looked at the psychiatric diagnoses in pain clinic patients. These data have to be interpreted cautiously, because of the selection factors that make it likely that patients who reach pain clinics are likely to be experiencing more psychosocial distress than those seen in primary care.\textsuperscript{24} The general findings are that a majority of patients with chronic pain have an intercurrent psychiatric disorder—commonly a mood disorder—with major depression or dysthymic disorder; an anxiety disorder with generalised anxiety, panic disorder, or phobic anxiety; an adjustment disorder related to their pain problem or one of the somatoform disorders, pain disorders, or somatisation disorder. The possibility of an underlying dementia must be borne in mind, particularly in the older age group, and substance use and abuse are not infrequently, complicating factors in the presentation.\textsuperscript{25-27} The important point about these psychiatric presentations is that they seldom explain the pain fully and most patients have both medical and psychosocial factors contributing to their pain condition. Table 1 shows the distribution of psychiatric diagnoses in a consecutive series of 50 patients, seen at the Auckland Hospital Pain Clinic, in whom the diagnoses were validated by independent assessors using DSM-III criteria. Only one of these patients (2%) did not have a clear physical diagnosis.\textsuperscript{27}

The new DSM-IV classification uses a category of ‘pain disorder’ for patients who are preoccupied with pain, but in whom there is no clear physical explanation. This is a dualistic diagnosis and it is debatable whether this is a useful way to characterise pain that lacks obvious physical pathology. It is interesting that, in the earlier formulations of DSM-III, the authors had been unable to find a single representative case of what was then called ‘psychogenic pain disorder’, for inclusion in the DSM-III casebook.\textsuperscript{28} This says something about the rarity of purely ‘psychogenic’ pain, or at least illustrates our difficulty in identifying and demonstrating ways in which psychological factors can account for pain. Dualistic thinking is dangerous to pain patients, because it leads to the dual hazards of the patient being dismissed as a ‘crazy’ obsessive, or having their psychosocial needs totally ignored whilst clinicians enthusiastically try to cut, stab, or poison the pain out of them. We need to develop modes of management whereby proper attention can be paid to physical and psychosocial factors simultaneously.

Where a clear depression or anxiety state is present, it seems obvious that treatment should be directed specifically towards the psychiatric disorder in addition to attending to the pain. Some balance and judgment is required, however. Although psychiatrists often focus on depression and the good responses to antidepressant drugs, many patients continue to experience pain despite resolution of their

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency (%)</th>
</tr>
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<tbody>
<tr>
<td>Dysthymic disorder (ie low grade chronic depression)</td>
<td>28</td>
</tr>
<tr>
<td>Major depression</td>
<td>8</td>
</tr>
<tr>
<td>Psychogenic pain disorder</td>
<td>8</td>
</tr>
<tr>
<td>Somatisation disorder</td>
<td>8</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>8</td>
</tr>
<tr>
<td>Psychological factors affecting physical condition</td>
<td>34</td>
</tr>
<tr>
<td>No psychiatric diagnosis</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1: Clinical psychiatric diagnoses among 50 consecutive patients with chronic pain using DSM-III criteria.
depression. Conversely, pain management programmes have been shown to have an antidepressant effect in their own right. Depression does not, therefore, mean that antidepressant drugs are necessarily indicated and, especially, does not imply that antidepressant medication should be the sole treatment.

In the case of the somatising disorders, management becomes more complex. Somatisation disorder is a well validated psychiatric diagnosis identifying a subgroup of patients who present repeatedly with physical complaints in various organ systems, for which no clear physical cause can be found. These patients are at great risk of iatrogenic complications, and management is best directed toward limiting investigations and treatment. A controlled trial of supportive management versus conventional management has shown clear advantages in terms of cost and the reduction of unnecessary interventions.

Psychosocial precursors to pain
George Engel published an influential article on the 'pain prone patient' which suggested that many patients with chronic pain had a pattern of defeat, punishment, and emotional deprivation in early life, that continued on into unsatisfactory relationships in adult life, often with continuing abuse and defeat. Engel was struck by how often his patients seemed to present with pain just when they had found a more sympathetic partner, and when one might expect matters to improve. He implicated guilt as a central issue. There has been continuing exploration of these ideas, with some authors coming out very strongly in favour of pain proneness as a full explanation of chronic pain. Systematic research is difficult here, because of the problems inherent in unravelling subtle psychodynamic variables from complex life histories. There are, however, some studies that lend credence to the idea that life's disadvantages can predispose some people to a chronic pain problem. In recent years, attention has focused on the frequency of past sexual abuse in patients with chronic pain and for some groups, particularly women with chronic pelvic pain, the incidence is very high indeed. The linking of past sexual abuse to any medical or psychiatric disorder is fraught with difficulty as one tries to distinguish the factor of sexual abuse from other social disadvantage, but in the case of pain there does seem to be some face validity to the idea that past painful experiences could sensitise the individual to later pain problems.

One way of understanding these connections is to postulate some process of sensitisation that may follow traumatic and painful experiences. This sensitisation could be psychological or neurophysiological, or both, and there are parallels here in current thinking about possible 'kindling' processes in post-traumatic stress disorder and in bipolar mood disorders. Another possibility might be that such experiences determine the coping strategies people develop and that the transition from acute pain to a chronic pain syndrome might be determined by the adaptiveness of the individual's defences or coping strategies. Poor prognosis has been linked to a tendency to 'catastrophise'. This is a common attitude in patients with chronic pain and depression, in whom there is a tendency to see the worst possibility in any given situation. This characteristic, and a tendency toward a low sense of 'self efficacy', have been shown to predict poor outcome in pain management programme evaluations.

Coping and chronic pain
Coping is a very topical issue in the current psychological literature on pain. Pain can be construed as a stressor, and coping as the strategies used by people to manage in the face of the stressor. This is a complex process and involves some appraisal and evaluation of the threat, in addition to the mental and physical attempts made to deal with the threat as it is perceived. People who appear to be adapted to 'living with' their pain problem seem to emphasise the importance of acceptance, of using a wide range of mental and physical strategies, of having flexible strategies, and of being able to hope for a better future. Despite the high value placed by professionals on coping, those people with pain who define themselves as copers tend to regard this as something of a 'necessary evil' and would far rather be free of their pain. Health care professionals need to bear in mind, therefore, that even individuals who appear to be managing their pain well may be longing for the day when their pain will stop.

The literature on coping is beginning to offer some insights into those coping strategies that are adaptive in the face of pain and those that are not. There is some way to go before we can become sanguine about our knowledge of how to teach people to cope better. Perhaps the most promising avenue lies in attempts to teach people to reduce catastrophising and to increase their sense of self efficacy.

Psychological processes as a cause of pain
Speculation about the ways in which pain might be caused by psychological processes has been rife for decades, often leading to heated debate, but progress has been slow in developing the research and the research methods that can sensibly explore this interesting question.

Muscle tension is a possible candidate as a causative factor, and much of the current emphasis on relaxation training and biofeedback has been founded on the notion that excess muscle tension causes pain. The usual theoretical explanation has been to invoke the notion of muscle contraction leading to ischaemia and ensuing pain. To date there has been little scientific validation of this idea, though some studies concerned with this question have made some positive findings. The literature on outcome in electromyography (EMG) feedback has pointed to the likelihood
that the favourable response of musculoskeletal pain to biofeedback is probably mediated by cognitive changes, notably a belief that the pain can be controlled, rather than by direct reductions in levels of muscle tension. Nevertheless, it seems unlikely that this question has as yet been thoroughly explored, and some investigators are now using EMG mapping techniques in conjunction with stress interviews in a revisiting of psychosomatic connections in back pain. A more sophisticated version of the muscle tension hypothesis was put forward by Whatmore and Kohli, with considerable detailed polygraphic data in support of the notion that many individuals with pain might engage in excessive bracing as part of their management of daily living. They used the term ‘dysponesis’ to describe the excessive ‘work’ done by these individuals in dealing with day to day adversities. Clinically, it is common to hear from patients how they find themselves clenching fists, bracing shoulders, and clenching jaws almost unwittingly. Jaw clenching and parabuccal habits may be an important contribution to facial pain syndromes.

Another mechanism of causation of pain that is suggested, but presents an even greater challenge to scientific validation, is that of ‘conversion’. This process was best articulated by Freud and Breuer a century ago. Demonstrations of ‘hallucinated’ pain in laboratory experiments with hypnosis suggest that there are mental mechanisms by which an idea or a suggestion can be translated into physical pain. Some authors have explained such mechanisms in the pain presentations of individual patients. These reports are exclusively case reports that present retrospective explanations of pain in the course of intensive psychotherapy. Recent discussion about descending pathways that might amplify pain signals adds some credence to the possibility of conversion, as do studies looking at the effect of a mental phenomenon such as hypnosis on pain tolerance and, in a recent report, on the regulation of spinal nociceptive mechanisms. Conversion, dissociation, and hypnosis create a difficult landscape for science, representing very much the subjectivity of individual human experience.

One of the oldest and most prevalent of psychosomatic notions has been the idea that repressed affect could lead to illness and disease. Migraine, for example, has been thought of as a syndrome related to the suppression or repression of anger. This idea is making something of a comeback in recent research on the effects of ‘confession’. Much of this work is focused on psychoimmunological effects, but it is likely to have some relevance to pain also. Some writers have speculated that people who are unable to translate feelings of distress into words may focus on the body and bodily symptoms instead. This brings the discussion into the field of human interactions, where pain has been seen as a communication and as a way of defining relationships. Patients with chronic pain begin to construe themselves as being physically ill as opposed to hypochondriacal, and may have to defend that position actively by providing evidence of their illness to family members and doctors. A redefinition of social role and self constructs is likely to be a potent factor in locking the individual into the pain experience, especially if the alternative is to be defined as a hypochondriac or malingerer.

Another concept in common usage is the notion of ‘secondary losses’. This idea is close to the behavioural notion of re-enforcement and is a way of looking at the environmental factors that might be maintaining the symptom of pain once it has developed. It is a problematical notion, in that there is considerable confusion about the accepted definition and usage of the term. It is often used as a jargon phrase in place of accusing the patient of malingerling, and carries connotations of deliberate deception. In fact, the term was originally used to describe the unplanned, fortuitous advantages of being in the ‘sick’ role and which may maintain the status quo. Just as frequently, there are secondary ‘losses’ also, for which the secondary gains are scant compensation.

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**Psychological treatment strategies**

Table 2 summarises the overall approach to treatment.

There is now strong research support for the use of comprehensive multidisciplinary pain management programmes in the treatment of chronic pain of non-malignant origin. Within the context of such programmes, however, are packaged a variety of psychological treatments with varying validity. Relaxation strategies in general are well validated in the treatment of tension-type headaches, but are also useful generally. In group studies, EMG feedback seems to add little to the general efficacy of relaxation. Hypnosis is at last being systematically evaluated, and there are some encouraging controlled trials demonstrating efficacy in temporomandibular pain, headache, fibromyalgia, and irritable bowel syndrome. A wealth of experience is being built up around the world about the ways in which to engage and encourage patients in working on psychological strategies for pain management. Behind the controlled trials, the themes of encouraging acceptance, enhancing self efficacy, and developing adequate coping strategies emerge. This emphasis and the success of...
this approach raises some particular dilemmas for the practice of medicine in relation to chronic pain. The model of management for chronic pain is very different from that of acute pain, for which history, examination, investigation, diagnosis, and specific treatment interventions win the day. In management of chronic pain, the acute illness model may often clash with the principles of enhancing self efficacy, of encouraging patients to accept and take responsibility for their pain and to reduce pain behaviours, and the endless search for the holy grail of the cure. Clinicians who base their practice on curing chronic pain frequently maintain their patients' disability by not allowing them to move on to a way of living with their pain that gives them back the opportunity to live their own lives and not the life of illness.

Managing chronic pain begins 'getting alongside' the patient. Pain patients are often angry, suspicious, and defensive, expecting to be disbelieved and readily dismissed. One can begin by accepting the pain at face value, showing an interest in the patient's experience of the pain and exploring the impact the pain has had on their lives. A very effective strategy is to use the pain as a vehicle to discuss emotional issues. People respond very much better to a question like 'how has this pain made you feel, does it get you down?' as opposed to 'are you depressed?'. When pain has been acknowledged and accepted by the doctor, it is much easier to move on to the educational discussions that must follow. Patients need to be informed about modern neurophysiological understandings of pain, as this information often allows them to see the 'bridge' between mind and body and the ways in which psychological approaches can have an effect. Concepts such as muscle tension, stress and depression are readily understood by many patients and accepted as relevant, provided they feel safe in the knowledge that we are not implying that they are 'imagining' their pain. The therapeutic discussion often has to be finely balanced between validating psychological interventions as effective and admitting the uncertainties of aetiology. It is important too, not to oversell the possible treatment benefits. Many pain patients have been promised cures in the past, only to be disappointed. It is better to focus the discussion on the notions of coping with pain, managing it, and taking charge of one's life. 'The pain has been your boss, now we want to help you become the boss of your pain!'. Effective treatment is usually embedded in a comprehensive approach emphasising education, activation, and psychological strategies. Cognitive-behavioural therapy involves a combination of looking at the ways in which patients think about their pain, and the words, images, and feelings associated with the pain, and then discussing and rehearsing alternatives. Many patients, for example, catastrophise their pain with thoughts like 'this is terrible, I can't cope, what will become of me', which can be disputed gently in therapy and replaced with 'this is my old, familiar, useless pain, I can cope, I know what to do'. The essentials of cognitive therapy often seem banal, but there is considerable skill required in engaging people in this process without sounding like a 'positive thinking' Pollyanna!

Cognitive approaches usually consider issues such as stress, anger, anxiety, depression, self assertion and communication as part of the package. Relaxation training should be suited to individual preferences and needs. Some people do far better with simple physical techniques such as progressive relaxation, whilst the more imaginative, highly hypnotisable individuals will gain far more from imagery and self hypnotic techniques.

Part of the treatment programme should include discussions about relapse—that is, the likelihood that bad times will occur—and the patient needs to be involved in planning how he or she will manage when this happens. Follow up should be set up as a time to review progress and encourage continued self management, not as an occasion to feel helpless and cast about desperately for ever more powerful treatments!

The success of multidisciplinary approaches to pain management makes clear the advantages of integrating physical and psychological modalities in pain management. This does not necessarily mean that every patient with pain must be referred to a pain clinic, but it does emphasise the need for all clinicians to develop a collaborative network of colleagues from other disciplines. Having said that, many of our more motivated, intelligent (and perhaps more fortunate) patients—those with good social and personal resources—will make remarkable changes if encouraged to read actively about pain and to implement a self designed pain management programme. The field is ripe for a systematic evaluation of such 'self management' in selected patients.

Conclusion
Our understanding of pain is both limited and enriched by the fact of its subjectivity. Limited because neuroscience does not perform well in the subjective domain. Enriched because psychological, psychiatric, and phenomenological approaches can appropriately explore, if not explain, the subjective. Hence we have come to accept the validity of subjective measures of pain, the profound psychological consequences of being in pain, and the frequency of psychiatric disorders in conjunction with the physical condition. We have some appreciation of the psychological precursors of pain and can speculate about possible ways in which psychological processes might cause pain. Comprehensive treatment strategies emphasising cognitive-behavioural approaches have much to offer, and doctors who understand these psychological issues are likely to be more effective in meeting the needs of those with chronic pain.

1 IASP Subcommittee on Taxonomy. Pain terms: A list with definitions and notes on usage. Pain 1979; 6: 247–52
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8 Turk D C, Rudy T E. The robustness of an empirically derived taxonomy of chronic pain patients. Pain 1990; 43: