

Chapter 1

The challenge of pain: a multidimensional phenomenon

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Pain is one of the most challenging problems in medicine and biology. It is a challenge to the sufferer who must often learn to live with pain for which no therapy has been found. It is a challenge to the physician or other health professional who seeks every possible means to help the suffering patient. It is a challenge to the scientist who tries to understand the biological mechanisms that can cause such terrible suffering. It is also a challenge to society, which must find the medical, scientific and financial resources to relieve or prevent pain and suffering as much as possible. (Melzack & Wall *The Challenge of Pain*, 1982)

Introduction

Last year, the International Association for the Study of Pain (IASP) introduced a revised definition of pain stating that pain is “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage [1]. Pain is divided into two broad categories: acute pain, which is associated with ongoing tissue damage, and chronic pain, which is generally taken to be pain that has persisted for longer periods of

time. Many injuries and diseases are capable of instigating acute pain with sources including mechanical tissue damage, inflammation and tissue ischemia. Similarly, chronic pain can be associated with other chronic diseases, terminal illness, or may persist after illness or injury with uncertain biological mechanisms. The point at which chronic pain can be diagnosed may vary with the injury or condition that initiated it; however, for most conditions, pain persisting beyond 3 months is reasonably described as a chronic pain condition. In some cases, one can identify a persistent pain condition much earlier, for example, in the case of post-herpetic neuralgia subsequent to an attack of shingles, if pain persists beyond rash healing it indicates a persistent or chronic pain condition is present.

Exponential growth in pain research in the past five decades has increased our understanding regarding underlying mechanisms of the causes of chronic pain, now understood to involve a neural response to tissue injury. In other words, peripheral and central events related to disease or injury can trigger long-lasting changes in peripheral nerves, spinal cord and brain such that the system becomes sensitized and capable of spontaneous activity or of

responding to non-noxious stimuli as if painful. By such means, pain can persist beyond the point where normal healing takes place and is often associated with abnormal sensory findings. In consequence, the scientific advances are providing a biological basis for understanding the experience and disabling impact of persistent pain. Table 1.1 presents definitions of pain terms relevant to chronic pain.

Traditionally, clinicians have conceptualized chronic pain as a symptom of disease or injury. Treatment was focused on addressing the underlying cause with the expectation that the pain would then resolve. It was thought that the pain itself could not kill. We now know that the opposite is true. Pain persists beyond injury and there is mounting evidence that “pain can kill.” In addition to contributing to ongoing suffering, disability and diminished life quality, it has been demonstrated that uncontrolled pain compromises immune function, promotes

tumor growth and can compromise healing with an increase in morbidity and mortality following surgery [2, 3], as well as a decrease in the quality of recovery [4]. Clinical studies suggest that prolonged untreated pain suffered early in life may have long-lasting effects on the individual patterns of stress hormone responses. These effects may extend to persistent changes in nociceptive processing with implications for pain experienced later in life [5, 6]. Chronic pain is associated with the poorest health-related quality of life when compared with other chronic diseases such as emphysema, heart failure or depression [7] and has been found to double the risk of death by suicide compared to controls [8] and suicide rates remain higher even when controlling for mental illness [9]. Often chronic pain causes more suffering and disability than the injury or illness that caused it in the first place [10]. The condition has major implications not only for those directly suffering, but also family and loved ones become enmeshed in the suffering person’s challenges, the work place suffers through loss of productive employees, the community is deprived of active citizens and the economic costs of caring for those suffering from chronic pain are dramatic.

Chronic pain is an escalating public health problem which remains neglected. Alarming figures demonstrate that more than 50% of patients still suffer severe intolerable pain after surgery and trauma [11–13]. Inadequately treated acute pain puts people at higher risk of developing chronic pain. For example, intensity of acute postoperative pain correlates with the development of persistent postoperative pain, which is now known to be a major and under-recognized health problem [13]. The prevalence of chronic pain subsequent to surgery has been found in 10–50% of patients following many commonly performed surgical procedures and in 2–10% this pain can be severe [12].

The epidemiology of chronic pain has been examined in high-quality surveys of general populations from several countries which have demonstrated that the prevalence of chronic pain is at least 18–20% [14–16]. These rates will increase with the aging of the population. In addition to the human suffering inflicted by pain there is also a large economic toll. Pain accounts for over 20% of doctor visits and 10% of drug sales and costs developed countries \$1 trillion each year [17].

Table 1.1 Definitions of pain terms.

Allodynia	Pain due to a stimulus that does not normally provoke pain
Anesthesia dolorosa	Pain in a region that is completely numb to touch
Dysesthesia	An unpleasant abnormal sensation, whether spontaneous or evoked
Hyperalgesia	An increased response to a stimulus that is normally painful
Hyperpathia	A painful syndrome characterized by an abnormally painful reaction to a stimulus, especially a repetitive stimulus as well as an increased threshold
Neuropathic	Pain initiated or caused by a primary pain lesion or dysfunction in the nervous system
Nociceptor	A receptor preferentially sensitive to a noxious stimulus or to a stimulus that would become noxious if prolonged
Paresthesia	An abnormal sensation, whether spontaneous or evoked (use dysesthesia when the abnormal sensation is unpleasant)

Source: Based on Merskey H, Bogduk N, eds. (1994) *Classification of Chronic Pain, Descriptions of Chronic Pain Syndromes and Definitions of Pain Terms*, 2nd edn. Task Force on Taxonomy, IASP Press, Seattle.

Chronic pain has many characteristics of a disease epidemic that is silent yet growing; hence addressing it is imperative. It must be recognized as a multidimensional phenomenon involving biopsychosocial aspects. Daniel Carr, in *IASP Clinical Updates*, expressed it most succinctly: "The remarkable restorative capacity of the body after common injury . . . is turned upside down (and) hyperalgesia, disuse atrophy, contractures, immobility, fear-avoidance, helplessness, depression, anxiety, catastrophizing, social isolation, and stigmatization are the norm" [18].

Such is the experience and challenge of chronic pain and it is up to current and future generations of clinicians to relieve or prevent pain and suffering as much as possible. The challenges must be confronted at biological, psychological and social levels. Not only is a better understanding needed, but reforms of caregiving systems that address medical, psychological and health service delivery must be undertaken.

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