

CHAPTER 1

Epidemiology of Chronic Pain

Blair H Smith and Nicola Torrance

Medical Research Institute, University of Dundee, Dundee, UK

OVERVIEW

- Chronic pain persists beyond normal wound healing, with around one in four adults suffering from chronic pain
- The majority of patients with chronic pain will be managed in the primary care setting, but complex cases will require specialist input
- Chronic pain, especially neuropathic pain, has a major impact on all aspects of general health
- Factors predisposing to chronic pain include those not amenable to intervention, such as increasing age and female gender, and also those that can be targeted, such as deprivation, or poor acute pain control
- Early identification and management of chronic pain are essential in order to minimise long term suffering and disability

Introduction

Pain is an individual experience, whose subjective nature makes it difficult to define, describe or measure, yet which is common to all human beings. As description and measurement are nonetheless essential, so, therefore, is a definition that suits both patients and professionals. Pain is helpfully, therefore, defined by the International Association for the Study of Pain (IASP) as *'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described by the patient in terms of such damage'*.

Chronic pain is defined by the IASP as *'pain that persists beyond normal tissue healing time'*. A range of factors may be involved, including physical and biological factors, and also behavioural and cognitive factors, and these may dominate the experience of chronic pain, which is ultimately primarily subjective (Box 1.1).

Box 1.1 Acute and chronic pain

Acute pain	→→→→→→	Chronic pain
Physiological		Pathological
Health preserving		Maladaptive
Warns of damage		Dysfunctional healing
Allows evasive action		Abnormal response to injury

ABC of Pain, First edition. Edited by Lesley A Colvin and Marie Fallon.
© 2012 Blackwell Publishing Ltd. Published 2012 by Blackwell Publishing Ltd.

What is chronic pain?

There are many similarities in the symptoms and impact of chronic pain between most individuals who experience chronic pain, irrespective of its cause. Consequently, there are also many similarities in approaches to preventing or managing chronic pain of different aetiological or diagnostic backgrounds. This has led some to propose the existence of a 'chronic pain syndrome', and certainly for many clinical and research purposes, there is considerable merit in regarding chronic pain as a single, global, clinical entity (while also paying suitable attention to individual, treatable causes of chronic pain).

Why is epidemiology important?

Epidemiology is *'the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control health problems'*.

(Last RJ. (2001) *A Dictionary of Epidemiology*, 4th edn. Oxford: International Epidemiological Association.)

It is the latter part of this definition that makes it such an important science in clinical medicine. The last twenty or so years have seen the publication of many good quality epidemiological studies of chronic pain that have enhanced our understanding of its causes, impact and approaches to management. Good epidemiological research on chronic pain can, and does, provide important information on its classification and prevalence and factors associated with its onset and persistence. This can inform the design and targeting of treatment and preventive strategies (Box 1.2).

Box 1.2 How does epidemiology help us with chronic pain?

- 1 Identifies factors associated with chronic pain and those which lead to or favour chronicity
- 2 Aids development of interventions to prevent chronicity or to minimise its impact
- 3 Improving understanding of associated factors in development will inform the clinical management of the condition, thereby possibly limiting severity and minimising disability

- 4 Understanding how chronic pain impacts on quality of life and what associated factors have greatest adverse effect (e.g. physical, psychological or social)
- 5 Understanding the distribution of chronic pain can help to target appropriate management strategies at the subgroups most likely to benefit, and individuals with less severe chronic pain might be identified with a view to prevention of exacerbation
- 6 Evaluation of treatment strategies: Until the distribution, determinants, impact and natural history of chronic pain are understood, it is impossible to evaluate properly any intervention aimed at improving chronic pain
- 7 Allocation of health service resources: Ideally this should be informed by robust epidemiological data. With a condition of the importance of chronic pain, it is crucial that research information is available for health service planning
- 8 Allocation of educational resources: As with financial and clinical resources, appropriate education of professionals and patients can be greatly assisted by epidemiological study

Source: Adapted from Smith, BH, Smith, WC & Chambers, WA. (1996) Chronic pain – time for epidemiology. *Journal of the Royal Society of Medicine*, **89**, 181–183.

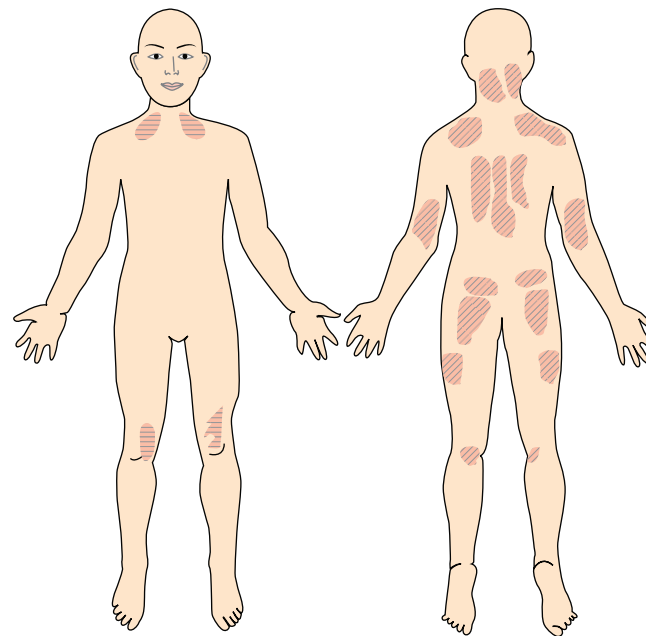


Figure 1.1 Pain diagram from patient with Chronic Widespread Pain.

How common is chronic pain?

The prevalence of chronic pain depends on exactly where, when and how it is measured. There is no universally agreed cut-off point between acute and chronic pain, but in the absence of other information, three months is often taken as the point beyond which ‘normal tissue healing’ should have taken place, and when pain therefore becomes chronic. Around one in four or five adults is currently experiencing chronic pain. A comprehensive literature review found a weighted mean prevalence of chronic pain of 25.9%. This is broadly similar to a large European study of over 46 000 people using a 6-month cut-off point (19.0%), and other systematic reviews.

Some studies have examined more severe, perhaps more clinically relevant, chronic pain. For example, ‘chronic widespread pain’ (bilateral pain above and below the waist, including the axial skeleton) has consistently been found to affect at least 5% of adults, and perhaps more than 11% (Figure 1.1).

A similar prevalence (5%) has been found for ‘severe chronic pain’ (intense, highly disabling, severely limiting pain). Pain with neuropathic features (which is often more severe and harder to treat than other pain) probably affects at least 6–8% of the population. These figures are similar to the prevalence rates of well-recognised conditions such as ischaemic heart disease and diabetes, for which health service resources are readily found. Chronic pain, however, generally attracts less attention and resource (perhaps because it is often regarded as a heterogeneous group of conditions, or as a symptom, rather than as a global entity requiring a global response) (Figure 1.2).

The commonest location of chronic pain is in the back, followed by the large joints (knee and hip). Other common causes of chronic



Figure 1.2 Chronic back pain is very common: around three out of four people will suffer from it at some point in their life. (Copyright © 2000, 2001, 2002 Free Software Foundation, Inc).

pain include headache, other joint pain, injury, and, importantly, neuropathic pain. The diagnosis of this is essential in order to initiate correct treatment (Chapter 6). In particular, persistent post-surgical pain (up to 30% of surgical patients experience pain beyond three months, and 5% experience severe chronic pain) may

be under-recognised and, therefore, under treated. Additionally, most people (approximately 75%) with chronic pain report pain at more than one site, and 18% report it at five or more sites. Indeed, evidence suggests that it is the extent of chronic pain (i.e. the number of sites at which it occurs) that determines its impact (and therefore treatment required), rather than the specific cause or diagnosis. Furthermore, around 75% of people with chronic pain have had it for more than a year, and around half have had it for five years.

The impact of chronic pain

The duration and extent of chronic pain are relevant in considering its impact. There is a very strong association between the presence of chronic pain and poor general health, no matter how this is measured. Every dimension of health is worse in the presence of chronic pain, at a population level, compared with those who do not report chronic pain. There is a direct relationship between the severity of pain and poor health, with neuropathic pain being associated with the most adverse general health indicators. This includes physical, psychological and social aspects of health (Box 1.3). There is a strong link between chronic pain and depression, such that it frequently becomes impossible to separate the two: chronic pain without measurable depression is rare, and depression makes the presence of chronic pain much more likely. It is probable that there are common aetiological factors shared by chronic pain and depression.

Box 1.3 Impact of chronic pain

Chronic pain has an adverse impact on:

- Physical functioning
- General health
- Mental health
- Vitality
- Social functioning
- Emotional roles
- Mortality (further study needed)

Factors associated with chronic pain

While the prevalence of chronic pain tends to rise with age (at least to a certain age), some studies, however, report a lower prevalence in old and very old age groups. This phenomenon may be the result of a genuine reduction in prevalence (i.e. a protective effect of ageing), a survival effect or an artefact (i.e. older people not reporting chronic pain in surveys, thinking perhaps that is simply part of normal ageing); is the subject of current research. Cultural and geographical differences in the reported prevalence of chronic pain are also apparent, and have several potential and complex explanations (Box 1.4).

Box 1.4 General factors associated with chronic pain

- Female gender
- Increasing age
- Acute uncontrolled pain
- Deprivation
 - Household income
 - Level of education
 - Socio-demographic group

While we are unable reasonably to intervene on some biological and social risk factors for chronic pain identified by epidemiological research (age, sex, location and culture), other risk factors consistently reported are potentially amenable to intervention. Notable among these is the strong association between deprivation and the presence, extent and severity of chronic pain. This suggests that, whatever else is done to improve chronic pain, political support is required. The most important risk factor for chronic pain is *pain*, either acute pain, or chronic pain elsewhere in the body. This highlights the need for healthcare professionals to take all reports of pain seriously, addressing these to prevent future long-term ill health.

Early suggestions that the elimination of acute post-surgical pain minimises the risk of future chronic pain are encouraging, particularly if this can be extrapolated to other forms of acute pain. With other risk factors for chronic pain there is more variability but there are some that are potentially important for the design of interventions. Generally speaking, interventions based on these are at an early stage of design and evaluation, but the potential is there and the possible benefits great (Figure 1.3).

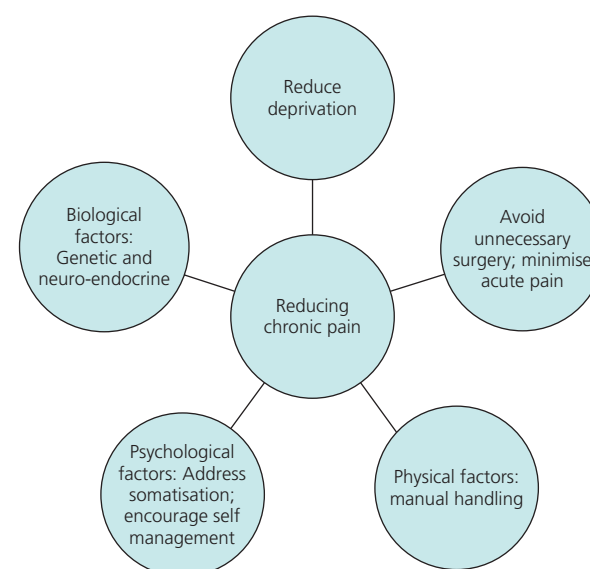


Figure 1.3 Reducing chronic pain by addressing some of the risk factors potentially amenable to intervention.

What is the cost of chronic pain?

The societal costs of chronic pain are difficult to gauge. One study of the economic burden of back pain in the United Kingdom estimated that it cost £10.7 billion, over than a decade ago. Some £1.6 billion of this was attributable to direct healthcare costs (the remainder being accounted for by lost productivity, benefits etc.; there is a demonstrable link between severity of chronic pain and the inability to remain or function in employment). It is estimated that around one in five consultations with a general practitioner (GP) is for a chronic pain-related reason, and that people with chronic pain consult their GP five times more frequently than those without.

Summary

In summary, therefore, chronic pain is a very common and important clinical condition, affecting individuals, the health services and society in diverse and adverse ways. The rest of this book explores some of the ways in which the problem can and must be addressed, and there is much good work currently underway to this effect in the clinical, educational and research arenas. This has been, and must continue to be, supported by epidemiological research, for

‘one’s knowledge of science begins when he can measure what he is speaking about and express it in numbers’ (Lord Kelvin).

Further reading

- Breivik, H, Collett, B, Ventafridda, V, Cohen, R & Gallacher, D (2006) Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. *Eur J Pain*, **10**, 287–333.
- Doth, AH, Hansson, PT, Jensen, MP & Taylor, RS (2010) The burden of neuropathic pain: a systematic review and meta-analysis of health utilities. *Pain*, **149** (2), 338–344.
- Maniadiakis, N & Gray, A (2000) The economic burden of back pain in the UK. *Pain*, **84**, 95–103
- McBeth J, Jones K. Epidemiology of chronic musculoskeletal pain. *Best Practice & Research in Clinical Rheumatology* **21**: 403–425, 2007.
- Smith, BH & Torrance, N (2008) Epidemiology of Chronic Pain. In: McQuay, HJ, Kalso, E & Moore, RA (eds), *Systematic Reviews in Pain Research: Methodology Refined*. Seattle: IASP Press, pp. 247–273.
- Smith, BH, Elliott, AM & Hannaford, PC (2004) Is chronic pain a distinct diagnosis on primary care? Evidence from the Royal College of General Practitioners Oral Contraception Study. *Family Practice*, **21**, 66–74.
- Verhaak, PF, Kerssens, JJ, Dekker, J, Sorbi, MJ & Bensing, JM (1998) Prevalence of chronic benign pain disorder among adults: A review of the literature. *Pain*, **77**, 231–239.