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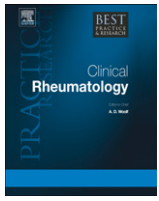

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How important are back pain beliefs and expectations for satisfactory recovery from back pain?

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In this article, we provide an evidence-based review of pain beliefs and their influence on pain perception and response to treatment. We examine the nature of pain perception and the role of cognitive and emotional processes in the interpretation of pain signals, giving meaning to pain and shaping our response to it. We highlight three types of beliefs that have a particularly strong influence: fear-avoidance beliefs, pain self-efficacy beliefs and catastrophising. We examine the influence of beliefs, preferences and expectations on seeking consultation, interventions and treatment outcome from the perspective both of the patient and the health-care practitioner. We then adopt a broader societal perspective, considering secondary prevention and campaigns, which have attempted to change beliefs at a population level. The article concludes with a summary of the key messages for clinical management of patients presenting with painful conditions and suggestions for further research.

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Health care should not only be judged appropriate if it is safe and effective, but also if individual patient preferences have been incorporated into decision-making processes [1]. Calls for more 'patient-centred' health care [2], increased patient choice [3], coupled with generally high rates of non-adherence to treatment highlight the importance of understanding and addressing patients' beliefs, expectations and preferences.

Professional training is predominantly biomedical or biomechanical in emphasis and, while addressing patient symptoms is at the core of the consultation, patient beliefs are seldom systematically identified or addressed. In this article, we review the current research on the nature of beliefs and their potential influence on pain perception, consultation and response to treatment considered from the perspective both of the patient and of the health-care practitioner (HCP). In our view, it is important to consider the modification of beliefs at both an individual and a population level. Having reviewed attempts to modify beliefs at a population level in the context of secondary prevention, we offer a set of key points in understanding and addressing beliefs in clinical management, and suggest a number of priorities for further research.

The role of beliefs in the perception of pain

The nature of pain perception

Recent advances in neuro-imaging are leading to the identification of pain pathways and parts of the brain associated with the shaping of pain perception. For example, functional magnetic resonance imaging (fMRI) has led to new understandings about how a painful stimulus is translated into pain perception in the brain. These new understandings have begun to clarify the cascade of events that follows the arrival of a 'pain signal', after which different parts of the brain become activated. It seems that beliefs, memories and emotions translate a pain signal into 'unique cerebral signatures' [4], which characterise our pain perceptions in terms of possible actions. This opens up the potential for a whole variety of psychological interventions, which might influence cortical activity.

Cognitive processes translate the pain signal into pain perceptions and offer mechanisms whereby the signal is interpreted in terms of its meaning, potential 'threat value' and potential significance for action. Legrain et al. offer a neurocognitive model of pain perceptions which makes a distinction between a 'top-down selection process' whereby incoming information is prioritised in terms of its significance, and a 'bottom-up selection', or involuntary capture of information relevant for escaping from bodily threat in which salient events are given a stronger neuronal representation [5]. They suggest that top-down attentional processes prioritise the information that enters our subsequent awareness in terms of its value for goal-directed activity.

Influence of cognitive processes on the experience of pain

Reflecting on the role of hypnosis in chronic pain management, Jenson noted that there was clear evidence that the experience of chronic pain is closely related to supraspinal nervous system activity, that hypnosis has direct effects on the supraspinal sites that are linked to the experience of pain and that self-hypnosis training is effective for reducing the severity of pain [6]. Three important findings emerge from these experimental studies: (1) beliefs influence the perception of pain; (2) pain beliefs can be modified; and (3) modification of beliefs is associated with activation of key anatomical sites and pathways. It would seem that in terms of pain perception, we might not be as 'hard-wired' as had been supposed.

Within this complex set of inter-relating mechanisms, there appears to be a number of key elements that individually, and in combination, influence the experience of pain. The role of *attention* is central in pain perception, but the important role of *anticipation* of pain based on prior (or imagined) experience has not always been recognised. In the context of specific beliefs about illness and in conjunction with emotional responses, anticipation of pain can establish unhelpful patterns of escape and avoidance, resulting in some control of pain, but at a cost of unnecessary pain-associated limitations.

Weich et al. have highlighted three factors that influence the experience of pain that might be valuable in the context of treating chronic pain: the role of memory; cognitive appraisal and hyper-vigilance; and catastrophising [7]. These are discussed in more detail in Box 1.