

Evidence Compass



Summary Report

What are effective psychological or multi-modal interventions for adults experiencing chronic pain?

Summary of the Rapid Evidence Assessment

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Australian Government
Department of Veterans' Affairs

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Executive Summary

- Chronic pain (sometimes known as persistent pain) is defined as a pain that has persisted beyond the normal healing time, approximately three months, despite efforts to treat the original cause¹. It has been associated with reduced well-being, impaired work functioning and disability, as well as showing high comorbidity with depression, anxiety, posttraumatic stress disorder (PTSD), substance abuse and insomnia.
- Chronic pain has prevalence rates in community epidemiology studies for adults ranging between 11% and 44% depending on the severity of pain, age and gender. Prevalence rates are higher amongst military samples, with one study finding nearly 50% of a sample of United States (US) veterans seeking Veterans Affairs (VA) healthcare, reported regular pain².
- In 2007, the total cost of chronic pain in Australia was estimated at \$34.3 billion, or nearly \$11,000 per person with chronic pain.
- The aim of this rapid evidence assessment (REA) was to examine the efficacy of psychological or multi-modal interventions (including a psychological component) for adults with chronic pain.
- The interventions included in this review fell into four categories: cognitive behavioural therapy (CBT), multidisciplinary pain management programs (MPMPs) mindfulness-based therapies, and behavioural therapies [respondent behavioural therapy (RBT) and operant behavioural therapy (OBT)].
- Four key domains were used in the assessment of pain outcomes: pain intensity, physical functioning, emotional functioning and patient rating of overall improvement.
- The literature search identified a relevant, high quality set of guidelines titled “Management of chronic pain: A national clinical guideline”. These guidelines utilised the Scottish Intercollegiate Guidelines Network (SIGN) methodology (from here onwards referred to as the ‘SIGN Guidelines’).
- An additional literature search was conducted to identify randomised controlled trials (RCTs) published post-publication of the SIGN Guidelines (2012-2014). Studies were included in the review if they included an adult population, reported on one of the four pain domain outcomes (pain intensity, emotional functioning, physical functioning and

patient rating of overall improvement) and utilised a psychological or multi-modal intervention.

- The findings of the SIGN Guidelines were taken together with the findings of the post-SIGN RCTs. The RCTs were assessed for quality of methodology, risk of bias, and quantity of evidence, and the consistency, generalisability and applicability of the findings to the population of interest. These assessments were collated to determine an overall ranking of level of evidence support for each intervention.
- The ranking categories were ‘Supported’ –clear, consistent evidence of beneficial effect; ‘Promising’ – evidence suggestive of beneficial effect but further research required; ‘Unknown’ – insufficient evidence of beneficial effect; ‘Not supported’ – Clear, consistent evidence of no effect or negative/harmful effect.
- Thirty-one RCTs met the inclusion criteria for this REA. The majority investigated the effectiveness of CBT (n=18). Seven studies investigated mindfulness-based interventions, five studies investigated MPMPs and one study investigated RBT. Overall, the quality of the studies was generally high, with very few poor quality studies.
- Based on the findings of the SIGN Guidelines in combination with the post-SIGN Guidelines literature, rankings were made for each of the interventions included in this review. The key findings were that:
 - The evidence for CBT in treating chronic pain in adults received a ‘Supported’ ranking.
 - The evidence for MPMP in treating chronic pain in adults received a ‘Promising’ ranking.
 - The evidence for mindfulness-based interventions in treating chronic pain in adults received a ‘Promising’ ranking.
 - The evidence for RBTs (a form of behavioural therapy) in treating chronic pain in adults received a ‘Promising’ ranking.
 - The evidence for OBTs (a form of behavioural therapy) in treating chronic pain in adults received an ‘Unknown’ ranking.
- The findings of this REA suggest that CBT has the strongest evidence base for the treatment of chronic pain in adults. While other psychological interventions are gaining momentum, there remains a need for these interventions to be tested against the established treatment of CBT.

Background

Chronic pain is a debilitating problem associated with significant psychological and social problems. Following injury, most people recover and the associated acute pain typically subsides in the ensuing weeks and months. However, when the pain persists for an extended period of time it may be defined as chronic. Chronic pain is associated with reduced well-being, impaired work functioning and disability, as well as mental health problems³⁻⁵. A number of different psychological interventions have been developed to assist with pain management and reduction of the associated symptoms including CBT and pain management programs. In practise, there is a variety of different types of interventions used and not all have been evaluated for their effectiveness.

The aim of the current review was to examine the efficacy of psychological interventions and multi-modal interventions that include a psychological component, in the treatment of chronic pain. This REA focused on those categories of psychological and multi-modal therapies that are most commonly used to treat chronic pain in adults, and which were identified as being of most relevance to DVA. Specifically, the REA examined literature relating to the efficacy of cognitive behavioural therapy (CBT), multidisciplinary pain management programs (MPMPs), mindfulness-based interventions and behavioural therapy. Each of the included categories of intervention are described in more detail in the section below.

Psychological interventions

Cognitive behavioural therapy (CBT) is defined as a type of psychological therapy that focuses on the relationship between cognitions, behaviours, and emotional responses⁶. CBT targets cognitions, behaviour and reasoning styles of a person experiencing chronic pain. Particular types of CBT interventions that may be used to treat the underlying mechanism of chronic pain include graded exposure, graded activity and cognitive therapy. In graded exposure, the objective of the treatment is the extinction of fear responses through exposure therapy and modification of unhelpful thoughts. The client and the therapist collaborate to identify negative thinking patterns arising in relation to movements that may lead to further damage or injury and the client is supported in recognising and evaluating these as they occur to identify new, more constructive thoughts. Graded activity concentrates on reinforcing and increasing activity and replacing problematic pain behaviours with more helpful healthy behaviours. Cognitive therapy concentrates on modifying cognitions such as

catastrophizing about re-injury or the triggering of pain, beliefs about nature of pain and ability to control pain, and improving coping skills (self-efficacy) and expectations about recovery⁷.

Multidisciplinary pain management programs (MPMPs) are a type of multi-modal intervention that address multiple complexities experienced by a person with chronic pain⁸. There is variability between different MPMPs, but the treatment usually addresses one or more biological, psychological, social and occupational factors that contribute to chronic pain problems. As such the treatment is usually directed by multiple disciplines and may include psychologists, physiotherapists, physicians, occupational therapists or social workers. There are no standardised guidelines as to what constitutes multidisciplinary treatment of chronic pain, and interventions vary widely and may include education, physiotherapy, CBT, complementary and alternative approaches, occupational and environmental interventions⁸.

Mindfulness-based interventions are a group of treatments that focus on helping the individual redirect attention to the present moment, and reconsider relationships between thoughts, feelings and current experience⁹. That is, in contrast to standard treatments like CBT, the individual's symptoms are not the focus of treatment. Mindfulness-based interventions are becoming increasingly recognised as an alternative intervention for chronic pain. In this review, three types of mindfulness-based interventions were explored, and while it is recognised that they differ in important ways, they were grouped together under the umbrella term of mindfulness-based interventions because mindful process are at their core. The first type of intervention is known as mindfulness based interventions (MBIs). MBIs are interventions that are concerned with shifting awareness, focusing on the present and maintaining a non-judgemental stance towards the experience of pain. The second is known as mindfulness based stress reduction (MBSR). MBSR is a specific, structured group-based program that incorporates yoga exercises and mind-body education¹⁰. Proponents of MBSR identify yoga as helpful in treating some of the mechanical aspects of pain, such as tight muscles that contribute to pain. The third of these mindfulness-based interventions is known as acceptance and commitment therapy (ACT). ACT is a structured therapy that utilises a mindfulness-based approach but also focuses on the experience and willingness to experience pain, while neutralising unhelpful thoughts and re-engaging in activities¹¹.

Behavioural therapy that focuses on treatment of chronic pain includes Respondent Behavioural Therapy (RBT) and Operant Behavioural Therapy (OBT)¹². RBT views the

chronic pain as a cause and result of muscular tension. The treatment therefore focuses on modifying the physiological response system to pain by reducing the muscular tension. The specific types of RBTs include progressive muscle relaxation, applied relaxation and electromyographic (EMG) biofeedback. In contrast, OBT is based on the notion that unhelpful behaviour can be reinforced either by the individual themselves or by their environment and thus becomes a chronic problem. As such, OBT focuses on removal of positive reinforcement of pain and promotion of healthy behaviours¹³.

The aim of this review was to examine the efficacy of the most commonly used psychological and multi-modal interventions for the treatment of chronic pain in adults. In consultation with the Department of Veterans' Affairs (DVA), the specific types of interventions that were included in this review were CBT, MPMPs, mindfulness-based interventions and behavioural therapy [in the form of respondent behavioural therapy (RBT) and operant behavioural therapy (OBT)]. This review included literature on non-malignant pain conditions including musculoskeletal pain, neuropathic pain, back pain and non-specific chronic pain. Non-malignant conditions were included because they are those conditions where the course of disorder is relatively stable and therefore more amenable to psychological interventions, while malignant conditions tend to become progressively worse. This review did not include literature related to headaches, due to the fact that the chronic pain literature and the headache literature are routinely considered to be separate entities in the research community. This is because the treatments for headache are substantially different to those for other types of chronic pain¹⁴, and therefore it did not make sense to include them in this review.

Evaluating the evidence

Assessment of the evidence was based on the following criteria:

- the **strength of the evidence base** which incorporated the quality and risk of bias, quantity of the evidence (number of studies), and level of the evidence (study design)
- the **consistency** across studies
- the **generalisability** of the studies to the target population
- the **applicability** to an Australian context.

Ranking the evidence

Eighteen studies met the inclusion criteria for the current review. After the evidence was evaluated, the studies were ranked as follows:

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
CBT	MPMPs Mindfulness-based therapies RBTs	OBTs	

'Supported' means there was clear and consistent evidence of a beneficial effect of the intervention; **'Promising'** means the evidence was suggestive of beneficial effect, but requires confirmation with additional evidence/research; **'Unknown'** is defined as insufficient evidence at present on whether or not to support the use of this intervention, or additional evidence is required to determine efficacy of intervention; **'Not supported'** is defined as evidence suggesting that the intervention does not have an effect, or produces a harmful effect when implemented.

Implications for policy makers and service delivery

The results of this REA suggest that there is sufficient evidence to indicate that CBT should be made available to adults with chronic pain. The SIGN Guidelines made recommendations to also consider MPMPs as a treatment for chronic pain in adult populations, which is supported by the findings of this REA. As noted above non-inferiority trials comparing MPMP, mindfulness-based and behavioural interventions with CBT should be a research priority. Given the heterogeneity of the pain conditions and pain domains studied, it is important that direct comparisons of treatments are made within populations with the same chronic pain condition. In addition, the exact component(s) of therapies or the specific

combinations that are most effective remain unknown. For example, MPMP needs to be standardised and tested more rigorously. Further dismantling studies are also needed to determine which components of the multi-modal interventions are most effective in treating adults with chronic pain.

Although there is some uncertainty around the efficacy of individual treatment components, the improvements in chronic pain across different modalities demonstrated for the CBT interventions (i.e., face-to-face, group-based and telecommunication-based) indicate that the treatment itself is fairly adaptable and effective in several modes. This may prove to be very useful for clients who are remotely located from service providers, limited in mobility, and have a varying range of treatment preferences. However, this was not systematically explored therefore these findings should be taken cautiously and re-assessed in light of future studies.

Some of the therapeutic approaches explored rely on Eastern philosophies of the body as a system in balance, the rhythm of which can be restored through heightened states of consciousness and acceptance. Such approaches may appeal to audiences who prefer the anxiety-reducing aspect of relaxation therapies. The efficacy of such interventions, however, remains to be fully established. In the future, if some of these interventions develop a sufficient evidence base, then perhaps they may offer a wider range of socially and culturally acceptable treatment options to those with chronic pain which ultimately may assist funders and service providers in meeting a broad range of needs. This is particularly pertinent given that veterans can be a difficult population to engage and retain in treatment, meaning that the ability to provide a wide range of treatment options is desirable.

Conclusion

Chronic pain is highly prevalent, very costly and should be a priority for treatment, given the negative effects on overall mental health, physical functioning and disability. This review found that effective psychological treatments are available with strong support for the use of CBT in the treatment of chronic pain. The majority of the RCTs investigating the efficacy of CBT were consistent in terms of the direction of their findings, reporting a reduction of pain related symptoms in at least two domains, over the course of the intervention and at follow-up. The studies were conducted in many countries around the world including US, UK and Australia, making the data generalisable to an Australian context. The evidence for CBT in treating chronic pain in adults therefore received a 'Supported' ranking.

Review of the literature on the use of MPMP was more limiting due to a smaller number of RCTs investigating the efficacy of MPMP for chronic pain. The results highlighted some inconsistent findings, which may be explained by the variability of the RCT designs (i.e. insufficient power to detect treatment effects), and variability of the treatment characteristics. The MPMP studies were conducted in many countries around the world including Canada and Norway, and considered to be broadly generalisable to adult Australians with chronic pain and applicable to the Australian context. The evidence for MPMP in treating chronic pain in adults therefore received a 'Promising' ranking.

The strength of the evidence base supporting the use mindfulness-based therapies (i.e., MBI, MBSR and ACT) for chronic pain was judged to be sufficient to suggest a beneficial effect for face-to-face individual and group-based treatments, but not those self-managed or delivered over the internet. Although the populations examined in the studies were varied, the studies were considered to be generalisable to adult Australians with chronic pain given that they mostly comprised Western samples. The treatments were considered to be applicable to the Australian context and evidence for mindfulness-based interventions in treating chronic pain in adults therefore received a 'Promising' ranking.

In respect to behavioural therapies, a single RCT was identified that assessed the efficacy of RBT in treatment of chronic pain. Given that the SIGN Guidelines recommended that RBTs, which included muscle relaxation and EMG feedback, should be considered for the treatment of chronic pain and a lack of substantial new additional evidence to contradict the SIGN Guidelines recommendation, the use of RBT for treatment of chronic pain in adults was ranked 'Promising'. The SIGN Guidelines did not make a recommendation for OBTs in terms of whether they should be considered as a treatment option. Instead they recommended that clinicians should be aware of their own behaviour and potential for clinical environments to impact and reinforce unhelpful responses in patients with chronic pain. Due to the lack of substantial evidence and recommendations by the SIGN Guidelines, the use of OBTs for the treatment of chronic pain in adults was ranked 'Unknown'.

The evidence from this REA was consistent with the SIGN Guidelines, demonstrating the strongest evidence for efficacy of CBT in the treatment of chronic pain. Other psychological interventions including MPMP and mindfulness-based therapies are gaining momentum, however there remains a need for these interventions to be tested against the established treatment of CBT, rather than being simply compared to a waitlist or treatment as usual comparison condition. Further research dismantling the components of specific interventions is also needed to identify which are the critical components. Such research has the potential

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to lead to brief, targeted and accessible treatments adaptable and effective for all adults with chronic pain.

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