

Project summary

Effectiveness and safety of chiropractic for the management of musculoskeletal conditions: an evidence-based review

July 2023

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Acknowledgements

ACC would like to acknowledge the contributions of:

- The external members of the Expert Reference Group for Chiropractic (the ERG), who supported the development of this work
- Professor Emeritus Stefan Pallister, who peer reviewed the evidence report.

The external and internal members of the ERG are listed in the Appendix.

Treatment timeframes

The treatment timeframes used in the evidence-based review¹ and referred to in this summary are defined as follows:

Timeframe	Duration from commencement of treatment
Short term	< 6 weeks
Medium term	6 to 12 weeks
Long term	>12 weeks

Strength of evidence descriptors

The evidence-based review used standardised terms to describe the strength of the evidence on which its findings were based. The terms are defined as follows:

Descriptor term	Strength of the evidence
Very strong	≥ 2 high quality systematic reviews or ≥ 3 high quality controlled trials
Strong	1 high quality systematic review or ≥ 2 acceptable quality systematic reviews or ≥ 1 high quality controlled trials plus > 3 acceptable quality controlled trials/cohort studies
Moderate	1 acceptable quality systematic review or ≥ 1 low quality systematic reviews plus ≥ 1 high quality controlled trials or ≥ 5 acceptable quality controlled trials/cohort studies
Weak	1 low quality systematic review or < 5 acceptable or low quality controlled trials/cohort studies
Very weak	1 low quality cohort study or ≥ 1 acceptable quality case control studies
Limited	Indicates that fewer than 3 relevant studies were identified

¹ International Centre for Allied Health Evidence (2022). *Effectiveness and safety of chiropractic for the management of musculoskeletal conditions*. Adelaide, University of South Australia.

1. Introduction

Background

To better understand the role of chiropractic in the management of musculoskeletal conditions, ACC has commissioned an evidence-based review of the published research on effectiveness and safety. The review has been carried out by the International Centre for Allied Health Evidence (iCAHE) based at the University of South Australia².

To support the development of the review, ACC set up an Expert Reference Group for Chiropractic (the ERG) which included representatives from the chiropractic sector. The ERG provided advice and subject matter expertise to guide both the review process and the interpretation of the evidence.

Purpose of this project summary

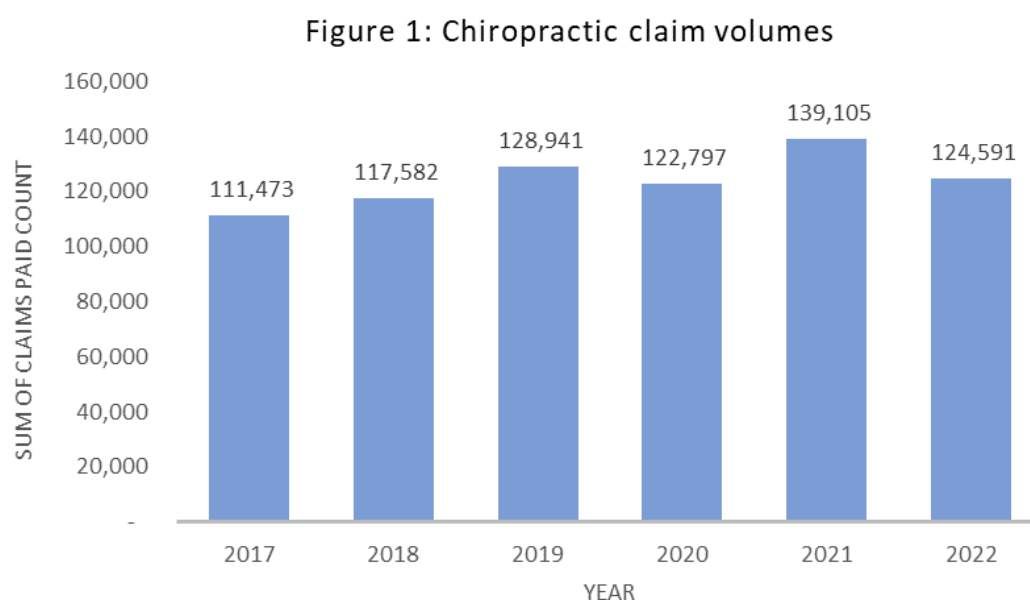
This project summary provides context on the work and describes how it was done. It also presents the main findings.

2. ACC data: claim numbers and conditions treated

This section provides context on the amount of chiropractic treatment that ACC funds for its clients, and on the most frequently treated conditions and body sites.

Claim volumes

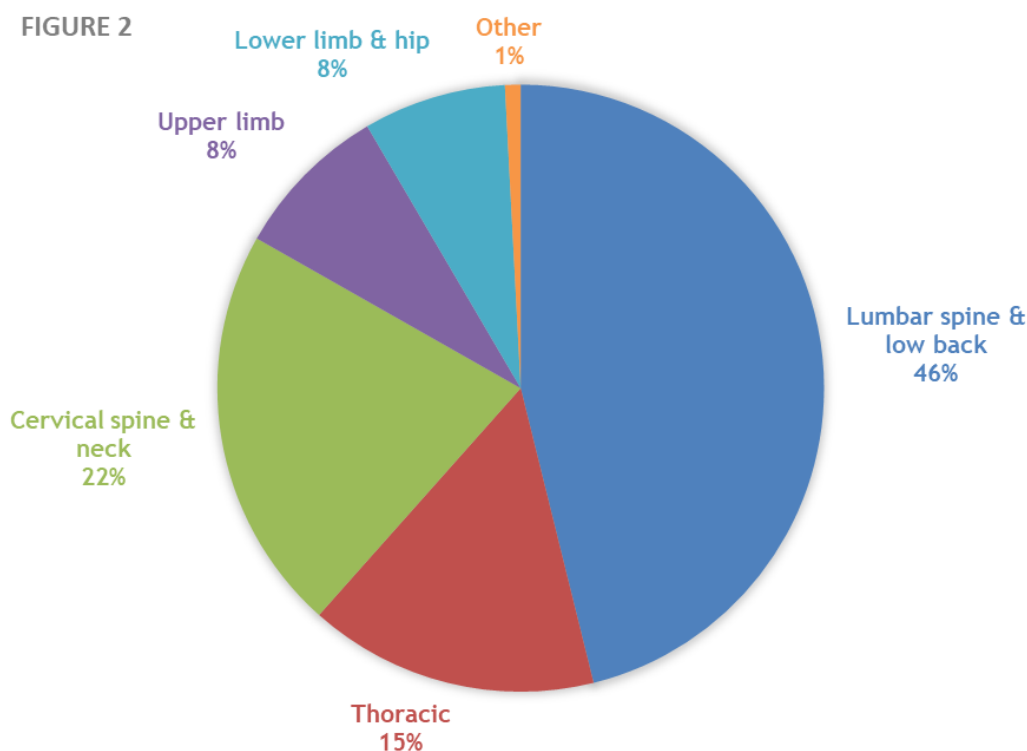
Figure 1 shows annual ACC claim volumes for the calendar years 2017 to 2022 (based on data available in February 2023):



² International Centre for Allied Health Evidence (2022). *Effectiveness and safety of chiropractic for the management of musculoskeletal conditions*. Adelaide, University of South Australia.

Conditions treated

Figure 2 presents a snapshot of the types of injuries for which ACC purchases chiropractic. The top 50 injury descriptions for claims with a chiropractic service for the financial years 2014-15 to 2020-21 were categorised according to site of injury (based on data available in November 2021):



3. The evidence-based review of chiropractic

The evidence-based review was carried out to systematically identify, critically appraise and synthesise the published clinical research on the effectiveness and safety of chiropractic for the management of musculoskeletal conditions and injuries.

Research questions

The key objective was to answer these primary research questions:

1. How **effective** is chiropractic in the management of musculoskeletal conditions?
2. How **safe** is chiropractic in the management of musculoskeletal conditions?

The review also sought to provide evidence-informed answers for the following secondary research questions:

1. How does the evidence on effectiveness and safety stack up for different musculoskeletal conditions and injuries?
2. Does effectiveness vary between different patient subgroups or injury subtypes?
3. Does effectiveness vary according to recovery stage or time post-injury, for instance, during the sub-acute versus the chronic stage?

4. What does the evidence tell us about factors such as recommended treatment duration, or optimum number of treatment sessions?

Methods

The evidence-based review was conducted using a robust systematic review methodology. The approach taken included the following steps:

- A systematic search of the clinical literature to identify relevant research studies
- Study selection using agreed inclusion and exclusion criteria
- Critical appraisal of the selected studies
- Evidence grading using internationally accepted tools and checklists³
- Synthesising the evidence in the form of a final report.

At each step, the ERG provided advice on the methods used and on how evidence from international research might be interpreted and applied in the New Zealand context.

The review was limited to studies published in the English language in peer-reviewed journals, in or after 2010. Studies were required to meet all the selection criteria.

The range of musculoskeletal conditions covered by the review was not pre-determined, but instead reflected what was reported in the literature. However, as the review aimed to be generalisable to typical ACC clients, studies on conditions unlikely to be related to a covered injury (for example, systemic inflammatory disorders like rheumatoid arthritis) were excluded.

4. Key findings from the evidence

This section summarises the findings of the evidence-based review regarding the research questions, and the conditions/body sites and rehabilitation outcomes of greatest interest to ACC.

Volume and quality of the evidence

A total of 138 studies met the selection criteria for inclusion in the evidence-based review. The studies included 45 systematic reviews, 36 controlled trials, 22 observational studies and 35 case reports.

The studies had many quality issues, the main ones being:

- Follow-up times were generally too short to allow evaluation of long-term effectiveness
- Conclusions on some conditions couldn't be reached due to the limited quality or quantity of relevant studies
- Many studies used practitioners who were not trained chiropractors. As the review aimed to explore the evidence base for chiropractic specifically, rather than for manual therapy more generally, these studies could not be included.

³ The SIGN checklists, available from [Checklists \(sign.ac.uk\)](http://Checklists.sign.ac.uk).

- Relationships between chiropractors' level of training or experience and treatment safety or risk were poorly reported.

Findings on effectiveness and safety

Evidence for the use of chiropractic in the management of musculoskeletal conditions varies in terms of volume, quality and consistency. It covers a wide range of study designs and focuses on effects over the short to medium term. For several conditions, the only available evidence comes from lower-level studies, for example, observational studies with no comparison treatment.

For both effectiveness and safety, the strength and volume of the evidence varies significantly across different conditions, injury types and body sites. For neck and low back pain, there is weak evidence, albeit limited and inconsistent, of an association between chiropractic treatment and serious adverse events. The findings are summarised below.

Cervical spine & neck

- For non-specific neck pain, there is moderate quality evidence that chiropractic may reduce pain and improve function in the short term. There is moderate to strong evidence that chiropractic interventions are as effective as some comparison treatments (e.g. physical therapy) in the short term. However, evidence for long-term use of chiropractic in people with chronic non-specific neck pain is limited.
- The evidence to support chiropractic is stronger for non-specific neck pain than it is for specific diagnoses such as whiplash or pain due to facet joint dysfunction.
- For cervicogenic headache, there is strong evidence that chiropractic may reduce headache pain, intensity and frequency in the short to medium term. There is moderate but inconsistent evidence that chiropractic may be as effective as laser, massage or physical therapy in the short to medium term.
- Safety of chiropractic treatment for neck pain: there is moderate to strong evidence of a link with minor adverse events, and weak evidence of a link with serious adverse events.

Thoracic spine & other thoracic conditions

- For non-specific thoracic spine pain, there is weak evidence that chiropractic interventions have effects on pain or function.
- For other thoracic conditions (e.g. chest wall pain, thoracic outlet syndrome), there is weak or no evidence for the effectiveness of chiropractic.
- Safety of chiropractic treatment for thoracic pain: there is weak evidence of a link with adverse events.

Lumbar spine & low back

- For non-specific low back pain, there is strong evidence that chiropractic may reduce pain and improve function in the short to medium term. However, there is strong but inconsistent evidence that chiropractic interventions are no more effective than massage, exercise therapy, standard medical care or physical therapy in the short to medium term. Evidence for long-term use of chiropractic in people with non-specific low back pain is weak.
- The evidence to support chiropractic is stronger for non-specific low back pain than it is for specific diagnoses such as disc herniation, spinal stenosis or sacroiliac joint pain.

- Safety of chiropractic treatment for low back pain: there is moderate evidence of a link with minor adverse events, and weak evidence of a link with serious adverse events.

Spinal pain in general

- There is strong evidence that chiropractic may be effective for general spinal pain in the short to medium term.
- However, there is moderate evidence that chiropractic interventions are no more effective than usual care.

Lower limb including hip

- Hip conditions: there is weak to very weak evidence for the effectiveness of chiropractic in the short-term management of non-specific hip pain, hip osteoarthritis or femoro-acetabular impingement.
- Knee conditions: there is weak to no evidence for the effectiveness of chiropractic in the short- or short-to-medium term management of non-specific knee pain, patellofemoral pain syndrome, knee osteoarthritis or cruciate ligament ruptures.
- Other lower limb conditions (e.g. Achilles tendinopathy, plantar fasciitis, recurrent ankle sprain): the evidence for the effectiveness of chiropractic in reducing pain and disability is weak or very weak and focuses on short-term management only.
- For several lower limb conditions, there is no evidence on the effectiveness of chiropractic management compared to that of usual care.

Upper limb

- General shoulder pain: there is weak evidence for the effectiveness of chiropractic in reducing pain and disability.
- Other upper limb conditions (e.g. adhesive capsulitis, superior labrum anterior to posterior (SLAP) lesions, lateral or medial elbow epicondylopathy, carpal tunnel syndrome): the evidence for the effectiveness of chiropractic in reducing pain and disability is weak or very weak and focuses on short- or short-to-medium term management only.
- For several upper limb conditions, there is no evidence on the effectiveness of chiropractic management compared to that of usual care.

Other musculoskeletal conditions

- Sports-related conditions: there is weak evidence that chiropractic may reduce pain and improve function in the short to medium term.
- Temporomandibular joint disorders: there is weak evidence that chiropractic may reduce pain and improve function in the short to medium term.
- For older adults with musculoskeletal conditions in general, there is weak evidence that chiropractic management:
 - may reduce pain and improve function in the short to medium term; and
 - is not linked with a higher risk of adverse events.

- Maintenance care following chiropractic management of musculoskeletal conditions: there is weak evidence that maintenance care is clinically- or cost-effective in preventing pain and disability in the short to medium term.

Findings on the secondary research questions

Are there any specific patient subgroups for whom chiropractic is more, or less, effective?

- There is weak evidence that a modified clinical prediction rule for chiropractic spinal manipulative therapy was not able to predict which patients with chronic low back pain would experience an improvement.
- There is very weak evidence that neck and low back pain patients treated with conservative, evidence-based chiropractic management improve with lower costs than those treated with non-standardised approaches.

Does effectiveness vary according to post-injury or recovery stage?

- For musculoskeletal conditions in general, there is weak evidence that the greatest degree of improvement from chiropractic care is seen in those with acute presentations.

What evidence is there on recommended length of treatment & number of sessions?

- For non-specific neck pain, most studies that found chiropractic spinal manipulation more effective than other approaches used treatment regimens of either:
 - 4-6 sessions over 1-2 weeks, or
 - 8-12 sessions over 3-4 weeks.
- For cervicogenic headache, most studies that found chiropractic spinal manipulation more effective than other approaches used treatment regimens of 8-16 sessions over 6-8 weeks.
- For patients with neck or low back pain, there is weak evidence that maximum therapeutic improvement is reached at three months. However:
 - only a minority experience either complete recovery or go on to develop chronic severe pain
 - most report a trajectory of symptoms characterised by persistent or fluctuating pain of low or medium intensity.
- For neck and low back pain, the greatest improvement is seen in those patients with worse baseline pain and function, who may have more room for improvement.
- For non-specific low back pain, there is weak evidence that 12 visits yielded the most favourable results, but this was not well-distinguished from other dose levels.

5. Recommendations and next steps

For ACC

- The ERG recommended that, in addition to exploring the published research, ACC might better understand the value of chiropractic for its clients by developing outcome measures

that capture patient experience (e.g. PREMs⁴) and a broader spectrum of rehabilitation outcomes, such as improved coping skills and participation levels.

- ACC is currently assessing the options for utilising the findings of the evidence-based review to improve clients' rehabilitation outcomes.

For the chiropractic sector

- There is clearly a need for better quality (and more rigorously reported) chiropractic research, and for more research on longer term outcomes.
- The iCAHE team recommended use of the Template for Intervention Description and Replication (TIDieR) framework to improve quality of reporting in chiropractic trials⁵.

⁴ PREMs (Patient-Reported Experience Measures) are tools that capture the patient's overall experience of the healthcare they receive.

⁵ The TIDieR framework improves completeness and structure in the way that interventions are reported in clinical research. This enables more reliable replication in subsequent research and ensures that interventions are delivered as intended. See: [Hoffmann, T. et al. \(2014\). Better reporting of interventions: template for intervention description and replication \(TIDieR\) checklist and guide. *BMJ* 348:g1687.](#)

Appendix: Expert Reference Group for Chiropractic

The Expert Reference group for Chiropractic (the ERG) was convened in October 2021 to support the development of a review of the evidence for the effectiveness and safety of chiropractic in the management of musculoskeletal conditions.

External members

Members from the chiropractic sector were nominated by their professional body, the New Zealand Chiropractors' Association, to provide subject matter expertise:

- Dr Imran Khan Niazi (academic representative)
- Dr Greg Oke (practitioner representative)

Independent members

Independent members were nominated by ACC to provide additional representation from academic, research and lay consumer perspectives:

- Professor Dave Baxter (University of Otago)
- Dr Hilary Stace (University of Victoria, Wellington)

ACC Members

- Julie Yee, Health Sector Partnerships (Chair)
- Amanda Bowens, Clinical Quality and Governance
- Greg Swann, Recovery Services
- Kay Conafray, Recovery Services