Chronic mechanical neck pain in adults treated by manual therapy: a systematic review of change scores in randomized clinical trials

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CRD summary
The review concluded that there is moderate- to high-quality evidence showing clinically important improvements after spinal manipulation and mobilisation for patients with chronic neck pain not due to whiplash and without arm pain and headaches, but insufficient evidence to support massage therapy. Given the limitations in the data and the review, the authors' conclusions should be regarded with caution.

Authors' objectives
To evaluate improvement after manual therapy for chronic mechanical neck pain in adults not due to whiplash injury and without arm pain or headache.

Searching
MEDLINE, CINAHL, AMED, MANTIS, ICL, AltHealthWatch, Cochrane Database of Systematic Reviews, Cochrane Controlled Trials Register and EBSCO were searched to December 2005; the search terms were reported. In addition, citation searches were conducted. The search was restricted to English language publications.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies were eligible for inclusion if they evaluated manipulation, mobilisation, manual traction, massage or pressure techniques. The included studies compared one type of manipulation, mobilisation, massage with or without exercises, and manual trigger point therapy plus stretching with another therapy. Control groups were treated with a variety of treatments such as spinal manipulation, mobilisation, physiotherapy, exercise (including stretching or aerobic exercises), acupuncture and medication. Where reported, treatment intensity varied and treatment duration ranged from 5 days to 11 weeks.

Participants included in the review
Studies involving adults aged 18 to 50 years and experiencing chronic neck pain for at least 8 weeks were eligible for inclusion. Studies were excluded from the review if they included patients with both neck and back pain, acute neck pain, neck pain with arm pain, headache, or pain due to whiplash injury, or multiple areas of pain where separate analysis was not undertaken.

Outcomes assessed in the review
Studies measuring pain or pain-related improvement were eligible for inclusion; data on function or self-rated disability were not considered. The included studies reported differences in pre- and post-intervention scores, change scores only, or the percentage of patients achieving a specified outcome criterion, measured using a visual analogue scale or numerical rating scale.

How were decisions on the relevance of primary studies made?
Two reviewers screened studies for relevance.

Assessment of study quality
Two reviewers independently assessed validity according to the Amsterdam-Maastricht Consensus List, with any disagreements resolved through discussion. An overall score was assigned to each study, with a minimum score of 11.5 out of 19 (60%) required for inclusion in the analyses.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Continuous data on outcomes were reported as means with standard deviations (SDs) and, where appropriate, differences between baseline and follow-up means were calculated for each study by intervention type. Where change scores were reported, the effect size was not calculated.

Methods of synthesis
How were the studies combined?
A narrative synthesis was provided, grouped by intervention type, and presumably unweighted mean effect sizes together with 95% confidence intervals (CIs) were reported for selected trials.

How were differences between studies investigated?
Differences in certain study characteristics were presented in the tables. The results of higher quality studies were compared with seven lower quality manipulation trials.

Results of the review
Sixteen trials (2,115 participants, 901 receiving intervention and 1,214 receiving comparative treatment) were included in the analyses. The included studies scored between 11.5 and 17 on the quality scale (mean 13.8, SD 1.7).

Up to 12 datasets (exact number of studies unclear) investigated manipulation therapy. The mean effect sizes at six weeks were 1.63 (95% CI: 1.13, 2.13; 10 datasets), 1.56 (95% CI: 0.73, 2.39; 5 datasets) and 1.22 (95% CI: 0.38, 2.06; 2 datasets). There were no significant differences in effect sizes between higher and lower quality studies. No major adverse events were reported.

Five studies on mobilisation were identified. One reported an effect size of 2.5 at six weeks, two reported full recovery in 63.8% and 71.7% of patients at 7 and 52 weeks, respectively, and one reported a greater than 2-point reduction in pain score (10-point scale) at four weeks in 78.3% of patients. No significant changes were reported in two massage therapy trials.

Authors’ conclusions
There was moderate- to high-quality evidence showing clinically important improvements after spinal manipulation and mobilisation for patients with chronic neck pain not due to whiplash and without arm pain and headaches, but insufficient evidence to support massage therapy.

CRD commentary
The review question was clear and was supported by appropriate inclusion criteria for the participants, intervention, outcomes and study design. It was not obvious why the review was restricted to RCTs when only before-and-after data was sought. Attempts were made to identify relevant literature by searching several electronic databases and other sources. Only English language publications were eligible for inclusion, which means that language bias might have been introduced into the review. Together with the fact that there was little attempt to search for unpublished material, it is possible that relevant papers were missed. Validity was assessed according to published criteria and scores were used as an inclusion criterion for the analysis, excluding the only identified trial of trigger point therapy. Although attempts were made to minimise errors and bias, this was only undertaken at certain stages of the review process and cannot be ruled out overall.

The number of included studies remained unclear because of the inconsistent labelling of multiple publications. Potentially important clinical information on participant characteristics was not reported, and the reporting of outcomes varied. The included studies had various methodological limitations, such as small sample size, follow-up duration and missing intergroup comparisons, which affect the reliability of the data synthesis and subsequent conclusions. In addition, the quality of reporting in the review limits the reliability of the authors’ conclusions.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that studies should include sham manual therapies or placebo to enable comparisons and determine accurate treatment effects of manual therapies. In addition, controlled trials should be undertaken to assess the effects of massage therapy.

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