

Effectiveness of Chiropractic Care

Research literature into the effectiveness of spinal manipulation, mobilization and chiropractic care continues to increase from year to year not only from researchers within the profession but from researchers in non-chiropractic institutions and other health care professions. Although the body of evidence for the effectiveness of spinal manipulation and chiropractic care particularly for low back pain, neck pain and headaches continues to show promise, much more work is needed.

A. Cost Effectiveness

1. A thorough analyses of the scientific literature on chiropractic treatment and its economic impact on low back pain was conducted in 1993 by health economists at the University of Ottawa under the direction of principal author Pran Manga, Director of the Master in Health Administration program at the university.¹

This report concluded that chiropractic manipulation is more effective than alternate treatments for lower back pain, and there would be significant cost-saving to the health care system if more management of lower back pain was transferred from physicians to chiropractors.

2. A recent study from the Netherlands (Korthals-de Bos, Hoving, van Tulder et al. Br Med J 2003;326:911-916)² investigated the cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain. The authors conducted an economic evaluation alongside a randomized controlled clinical trial for neck pain. Manual therapy consisted of spinal mobilization. The authors concluded the following:

- It is well known that the cost of treating neck pain is considerable and although there are many treatments available such as prescription drugs, their cost effectiveness has not been evaluated.
- Manual therapy is more effective and less costly than physiotherapy or care by a general practitioner for treating neck pain
- Patients undergoing manual therapy recovered more quickly than those undergoing the other interventions (GP care or physiotherapy)

B. Low back pain

Patients with low back pain account for the largest group treated by chiropractors, with several estimates averaging about 65% of clinical practice. Scientific investigations into the effects of chiropractic treatments in general, and spinal manipulation, specifically, for low back pain, began in earnest in the mid-1970's. By the early 1990's, enough good quality studies had been conducted to permit several large governmental reviews (See: Government Reviews) to conclude that spinal manipulation was effective in the treatment of acute low back pain and was promising for the treatment of chronic low back pain. By the mid-1990's, the benefit of spinal manipulation for chronic low back pain appeared to be confirmed.

Several national guidelines on the management of low back pain have been published in the 1990's and have recommended that spinal manipulation is strongly recommended as first-line treatment for acute and chronic low back pain.

Since 1995, a number of additional clinical trials have been reported which, for the most part, confirm the earlier evidence for the effectiveness of spinal manipulation for low back pain. Not all of these studies have come to the same conclusion. What follows is a brief review of a selection of some recent studies:

1. Meade TW, Dyer S, Browne W, Frank AO. A randomised comparison of chiropractic and hospital outpatient management for low back pain patients: results from an extended follow-up. *Br Med J* 1995;311:349-351.³

- This study presented long-term follow-up data of a study originally published in 1992 that included 741 patients with low back pain. In the original study, the group receiving chiropractic care had significantly greater reductions in pain and disability at three, six, twelve and twenty-four months.
- In this study, greater benefit was still obtained after 36 months.
- Subjects receiving chiropractic care expressed greater satisfaction with their care.

2. Skargren EI, Oberg BE, Carlsson PG, Gade M. Cost and effectiveness of chiropractic and physiotherapy treatments for low back and neck pain: Six month follow-up. *Spine* 1997;22:167-177.⁴

- 323 patients with low back or neck pain were randomized to receive treatment by either a chiropractor or physiotherapist.
- Similar results for clinical benefit and for costs were found in both groups.

3. Giles LG and Muller R. Chronic spinal pain syndromes: a clinical pilot trial comparing acupuncture, non-steroidal anti-inflammatory drug and spinal manipulation. *J Manip Physiol Therap* 1999;22:376-381.⁵

- 77 patients with chronic back or neck pain were investigated.
- After 30 days, only the group receiving spinal manipulation reported statistically significant clinical outcomes of reduced pain and disability.

4. Cherkin DC, Deyo RA, Battie M, Street J, Barlow W. A comparison of physical therapy, chiropractic manipulation and provision of an educational booklet for the treatment of patients with low back pain. *New Engl J Med* 1998;339:1021-29.⁶

- 321 patients with back pain were divided into three groups: chiropractic manipulation, physiotherapy or an educational booklet.
- Within 2 weeks, the two therapy groups showed improvements in pain scores which were equivalent and which were greater than those from the group receiving only the educational booklet.
- After three weeks, there were no differences between any of the groups.

5. Burton AK, Tillotson KM, Cleary J. Single-blind, randomized, controlled trial of chemonucleolysis and manipulation in the treatment of symptomatic lumbar disc herniation. *Eur Spine J* 2000;9:202-207.⁷

- 40 patients with sciatica were allocated to treatment with either chemonucleolysis or manipulation.
- Patients in the manipulation group had better outcomes for pain and disability within the first three weeks.
- At twelve months, there were no clinical differences between the groups.
- Cost analysis showed an advantage for the manipulation group.
- Manipulation should be considered as an option for the treatment of symptomatic lumbar disc herniation.

6. Hurwitz EL, Morgenstern H, Harber P, Kominski GF, Belin TR, Yu F, Adams AH. A randomized trial of medical care with and without physical therapy and chiropractic care with and without physical modalities for patients with low back pain: 6-month follow-up outcomes from the UCLA Low Back Pain Study. *Spine* 2002;27:2193-204.⁸

- 681 patients were enrolled in a comparison of medical and chiropractic treatments from low back pain (with and without physical therapy).
- After six months, patients in both groups did equally well.

7. Hurwitz EL, Morgenstern H, Harber P, Kominski GF, Belin TR, Yu F, Adams AH, Kominsky GF. The effectiveness of physical modalities among patients with low back pain randomized to chiropractic care: findings from the UCLA Low Back Pain Study. *J Manip Physiol Therap* 2002;25:10-20.⁹

- 341 subjects who received chiropractic care for low back pain were divided into two groups: those who received additional pain modalities and those who didn't. After two and six weeks, the group receiving additional modalities had some clinically important reductions in pain and disability which disappeared after six months.
- Patients in the group receiving modalities (as well as chiropractic treatment) were somewhat more satisfied with their care.

Patient Satisfaction:

Patients receiving chiropractic care almost universally express greater levels of satisfaction with this care as compared to medical or physiotherapy treatments. This result was obtained in the following clinical trials: Meade et al.³, Carey et al.¹⁰, Hurwitz et al.¹¹, Giles and Muller¹².

Other studies have shown similar results including studies in managed care settings (Gemmell and Hayes, 2001)¹³, general practice (Verhoef, Page and Waddell, 1997)¹⁴ and in the public at large (Coulter et al., 2002).¹⁵

C. Spinal Manipulative Therapy/Spinal Mobilization for Low Back Pain

1. Aure, Nilsen and Vasseljen (Spine 2003; 28(6):525-31)¹⁶ conducted a randomized, controlled trial with a 1-year follow-up comparing manual therapy to exercise therapy for patients with chronic low back pain. Pain intensity, functional disability, general health and return to work were the indicators used to measure response to treatment. Only patients who had low back pain or nerve root pain who had been sick-listed for more than 8-weeks but less than 6-months were included. The authors found the following:

- Although both groups improved, the manual therapy group showed significantly larger improvements on all of the outcomes over the entire trial period compared to the exercise therapy group
- After the 2-month treatment period, 67% of the manual therapy group versus 27% of the exercise therapy group had returned to work. This difference was maintained at the 1-year follow-up.

The authors concluded the following:

- Manual therapy demonstrated significantly greater improvement over exercise therapy for chronic low back pain patients and the effects were reflected on both short and long-term follow-up.

2. Hsieh, Adams, Tobis et al. (Spine 2002; 27(11):1142-8)¹⁷ conducted a randomized, assessor-blinded clinical trial comparing the effectiveness of four conservative treatments for subacute low back pain. The treatments included: back school, joint manipulation, myofascial therapy, and combined joint manipulation and myofascial therapy. The 200 patients were randomized to one of the four treatments and assessed after 3-weeks and 6-months after the completion of therapy.

The authors found that all four groups showed improvement after 3-weeks but no further significant improvement at 6-months follow-up. The authors concluded that:

- “For subacute low back pain, combined joint manipulation and myofascial therapy was as effective as joint manipulation or myofascial therapy alone. Additionally, back school was as effective as three manual treatments.”

3. In a review of manipulation and mobilization in the treatment of chronic pain (Clin J Pain 2001 Suppl 17(4): S70-S76)¹⁸, Mior identified three systematic reviews of the effectiveness of manipulation and mobilization for low back pain from the literature. He concluded:

- “Manipulation and mobilization are more effective for chronic low back pain than placebos or usual care for up to 6 months (level 2).” Level 2 indicates moderate evidence.

D. Neck pain:

There are now numerous well-designed studies and clinical trials that show cervical spinal manipulation is useful in the treatment of **neck pain** and **chronic headache** (tension-type, migraine, and cervicogenic headache) (1-5). Cervical spine manipulation is used to **decrease pain** (1,3,5a,5b,5c,5e), **improve range of motion** (1,3,5b,5c,5f), and **decrease muscle tightness** (2,4,5d) through **restoration of normal mechanics** and **improved functioning of the cervical spine** (5b,5c,5e,5f).

Studies since 1995:

1. Quebec Task Force (1995): Spitzer WO, Skovron ML et al. Scientific Monograph of the Quebec Task Force on Whiplash-associated Disorder: Redefining Whiplash and its Management. Spine 1995;20:8S¹⁹

- Leading medical researchers and clinicians reviewed the state of the scientific literature as it stood, then made treatment guidelines for whiplash disorders.
- Based on available literature and expert consensus, joint manipulation and mobilization were recommended to **improve neck range of motion** and **reduce pain** along with encouragement for early return to normal activities and work.

2. RAND Corporation Report (1996): Coulter ID, Hurwitz EL et al. The appropriateness of manipulation and mobilization of the cervical spine. Santa Monica, California: RAND. Document No. MR-781-CR.²⁰ Also found in: Hurwitz EL, Aker PD et al. Manipulation and mobilization of the cervical spine: a systematic review of the literature. Spine 1996; 21:1746-60.²¹

- Multidisciplinary expert panel including 2 neurologists, 1 neurosurgeon, 1 orthopaedic surgeon, 5 primary care medical doctors and chiropractors.
- Conclusions in Spine 1996; 21:1746:
 - “Manipulation is probably slightly more effective than mobilization or physical therapy for some patients with sub-acute or chronic neck pain, and all three treatments are **probably superior to usual medical care.**”
 - “Manipulation or mobilization may be **beneficial for muscle tension headache.**”

3. Cochrane Collaboration Systematic Review (1996): Aker PD, Gross AR et al. Conservative management of mechanical neck pain: Systematic overview and meta-analysis. British Medical Journal 1996; 313:1291-96.²²

- Evaluated studies on the conservative management of mechanical neck pain patients and came up with similar conclusions as above.
- Conclusions: **more evidence supporting manipulation and mobilization than other forms of treatment for mechanical neck pain.** However, the evidence was not as strong as for mechanical low back pain at this time.

4. Whittingham W, Nilsson N. **Active range of motion in the cervical spine** increases after spinal manipulation. J Manipulative Physiol Ther 2001; 24(9):552-555.²³

5. Bronfort G, Evans R et al. A randomized clinical trial of exercise and spinal manipulation for patients with **chronic neck pain**. Spine 2001; 26(7):788-800.²⁴

- Spinal manipulative therapy when combined with therapeutic exercise is effective in treating chronic neck pain and **improves neck strength, endurance and range of motion**.

6. Hoving JL, Koes BW et al. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. Annals Int Med 2002; 136:713-722.²⁵

- The message for physicians was: “**manual therapy is a favourable treatment option for patients with neck pain**.” The authors strongly discounted that the better effects for manual therapy over physical therapy and GP care was do to ‘hands-on-approach’ or placebo/non-specific effects.
- The purpose of the manual therapy was for **restoration of normal cervical spinal joint motion**.

7. De-Bos IBCK, Hoving JL, van Tulder MW et al. Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation alongside a randomised controlled trial. British Medical Journal 2003; 326:911-916.²

- A randomised controlled trial of neck pain patients in a primary care setting
- 183 patients with neck pain of > 2 weeks were recruited from 42 general practitioners practices in the Netherlands.
- 60 patients randomly allocated to manual therapy (spinal mobilization); 59 patients to physiotherapy (mainly exercise); 64 patients to GP care (counselling, education and drugs).
- Clinical outcomes were perceived recovery, intensity of pain, functional disability and quality of life.
- Conclusions: “Manual therapy (spinal mobilization) is more effective and less costly for treating neck pain than physiotherapy or care by a general practitioner.”

8. Evans R, Bronfort G, Nelson B, Goldsmith CH. Two-year follow-up of a randomized clinical trial of spinal manipulation and two types of exercise for patients with chronic neck pain. Spine 2002;27(21):2383-9.²⁶

“The results of this study demonstrate an advantage of spinal manipulation combined with low-tech rehabilitative exercise and MedX rehabilitative exercise versus spinal manipulation alone over two years.”

9. Hurwitz EL, Morgenstern H, Harber P, Kominski GF, et al. A randomized trial of chiropractic manipulation and mobilization for patients with neck pain: clinical outcomes from the UCLA neck-pain study. *Am J Public Health* 2002;92(10):1634-41.²⁷

This study examined the relative effectiveness of cervical spine manipulation versus mobilization for neck pain. The conclusions were: "Cervical spine manipulation and mobilization yield comparable clinical outcomes."

10. Giles LG, Muller R. Chronic spinal pain syndromes: a clinical pilot trial comparing acupuncture, a nonsteroidal anti-inflammatory drug, and spinal manipulation. *J Manipulative Physiol Ther* 1999;22(6):376-81.²⁸

Spinal manipulation was compared to acupuncture and a non-steroidal anti-inflammatory drug (tenoxicam with ranitidine) in patients with chronic neck pain. The group receiving the spinal manipulation showed significantly greater benefit.

11. Jordan A, Bendix T, Nielsen H, Hansen FR, et al. Intensive training, physiotherapy, or manipulation for patients with chronic neck pain. A prospective, single-blinded, randomized clinical trial. *Spine* 1998;23(3):311-8.²⁹

This study confirmed the results of the study by Bronfort et al., in that spinal manipulation was equally effective in chronic neck pain patients as was active, intensive exercising.

C. Headaches :

Studies since 1999:

1. Vernon H, McDermaid C, Hagino C. Systematic review of complementary/alternative therapies for tension-type and cervicogenic headaches. *Comp Therap Med* 1999.³⁰

This study evaluated all of the RCT's in complementary and alternative therapies for tension-type and cervicogenic headache up to 1999. Nine studies for acupuncture for tension-type headaches were found. Six studies of manipulation for both kinds of headache were found. Manipulation was shown to be effective in the treatment of cervicogenic headache and promising in the treatment of tension-type headaches.

2. Nelson CF, Bronfort G, Evans R, et al. The efficacy of spinal manipulation, amitriptyline and the combination of both therapies for the prophylaxis of **migraine headache**. *J Manipulative Physiol Ther* 1998; 21(8):511-9.³¹

Spinal manipulation was shown to be just as effective as drug therapy for migraines and possibly more effective in the long-run.

3. Tuchin PJ, Pollard H, Bonello R. A randomized controlled trial of chiropractic spinal manipulative therapy for **migraine**. J Manipulative Physiol Ther 2000; 23(2):91-95.³²

Spinal manipulation was shown to be effective for migraine headaches as compared to the control treatments.

4. Duke University Report (2001): McCrory DC, Penzien DB et al. Evidence report: behavioural and physical treatments for tension-type and cervicogenic headache. Des Moines, Iowa. Foundation for Chiropractic Education and Research Product No. 2085, 2001.³³

- Systematic review of evidence in scientific literature on behavioural and physical treatments for 2 types of headaches by medical experts from Duke University.
- Based on evidence from RCTs, **cervical manipulation is appropriate for the treatment of tension-type headache (TTH) and cervicogenic headache (CGH)**.
- No other physical treatments (acupuncture, mobilization, massage, electrotherapies) had evidence to prove they were beneficial for CGH.

5. Bronfort G, Assendelft WJ, Evans R. et al. Efficacy of spinal manipulation for **chronic headache**: a systematic review. J Manipulative Physiol Ther 2001; 24(7):457-66.³⁴

- Systematic review of the literature for chronic headache (tension, migraine, and cervicogenic headache).
- Cervical spinal manipulation has a better effect than massage for **cervicogenic headaches** and comparable effect to first-line prophylactic prescription drugs for **tension-type and migraine headaches**.

6. Mior SA. Manipulation and mobilization in the treatment of **chronic pain**. Clinical Journal of Pain 2001; 17(4 Suppl):S70-6.¹⁸

- Moderate level of evidence (level 3) for the effectiveness of manipulation and mobilization for **chronic post-traumatic headache** (e.g. whiplash).

7. Jull G, Trott P, Potter H, et al. A randomized controlled trial of exercise and manipulative therapy for cervicogenic headache. Spine 2002;27(17):1835-1843.³⁵

- A multicenter, randomized controlled trial of 200 subjects by physiotherapists in Australia.
- **“Manipulative therapy and exercise can reduce the symptoms of cervicogenic headache, and the effects are maintained”** over time.

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