

**Studies on
Chiropractic
2010**

**National Board
of Chiropractic
Examiners**

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The National Board of Chiropractic Examiners (NBCE) publishes research reports based on detailed surveys of chiropractic practitioners across the United States and an extensive review of literature. The most recent survey was in 2009; the resulting report is titled *Practice Analysis of Chiropractic 2010*.

Following the first report published in 1993, the National Board received numerous requests for permission to reproduce portions of the literature review. Subsequently, the NBCE prepared abridged literature reviews for the 2000 and 2005 reports. This current brochure includes portions of the literature review in *Practice Analysis of Chiropractic 2010*.



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The Growing Prominence of Chiropractic Care

Chiropractic is a natural, conservative, medication-free, and nonsurgical form of health care concerned primarily with the diagnosis, treatment, and prevention of disorders of the musculoskeletal system and the effects of these disorders on the nervous system and general health. During the past two decades, the attitudes of health professionals and consumers demonstrate a positive change in the view of chiropractic care. The extent of chiropractic health care acceptance, use, and efficacy is illustrated by the following statement:

“As a profession that over the past generation has made great strides into the American healthcare mainstream – with widespread utilization and patient satisfaction; a strong research base; inclusion in most private insurance plans, workers’ compensation insurance, Medicare, military, and veterans health care; and full recognition in Olympic and sports medicine – chiropractic now has the hallmarks of an essential health service” (Redwood, 2009, p.2.).

The chiropractic profession and its conservative approach to health care also continues to expand globally. The profession is now established in over 70 countries, and there are more chiropractic colleges (many within university systems) outside the United States (26) than there are within (18).

The growing acceptance of chiropractic care by athletes, members of the military, and govern-

mental agencies is well supported by scientific evidence. Contained herein are recent studies that demonstrate the effectiveness of chiropractic care for back, neck, and headache pain, as well as for other musculoskeletal and non-musculoskeletal conditions. Many of these studies also report patients' satisfaction with their chiropractic care, and there is an increasing number of studies concerning safety and cost-effectiveness.

Back Pain

The most common reason patients seek chiropractic care is for back pain and disability (Christensen, Kollasch, Ward, & Webb, 2005). This topic, therefore, has received the most emphasis from chiropractic researchers. Below are some more recent research highlights:

A major study reported in 2008 addressed 1,885 workers who reported claims for back injuries. The study found that **injured workers, whose first visit for health care was to a chiropractor, were much less likely to be disabled at one year** compared to workers who first visited primary care physicians, occupational medicine specialists, or other medical specialists (Turner et al., 2008).

Systematic reviews conducted by Bronfort and colleagues (Bronfort, Haas, Evans, & Bouter, 2004; Bronfort, Haas, Evans, Kawchuk, & Dagenais, 2008) and more recently by the Scientific Commission of the Council on Chiropractic Guidelines and Practice Parameters (CCGP) (Lawrence et al., 2008) report **substantial evidence supporting the effectiveness of spinal manipu-**

lation compared to other interventions for both acute and chronic low back pain. Additionally, Chou and Huffman (2007) performed a systematic review for the American Pain Society and the American College of Physicians to assist in the preparation of a clinical practice guideline; **they concluded that spinal manipulation was the most effective non-pharmacological treatment for acute and chronic low back pain.**

In Europe, a randomized double-blind clinical trial compared chiropractic manipulation (up to 20 visits) to a simulated manipulation for 102 patients with acute back pain and sciatica with disc protrusions. The researchers found **much better improvement of local and radiating pain for patients with acute back pain and sciatica with disc protrusion** treated with spinal manipulation by chiropractors compared to the simulated manipulation (Santilli, Beghi, & Finucci, 2006).

In 2004, Haas, Goldberg, Aickin, Ganger, and Attwood compared the effectiveness of chiropractic care to medical care for low back pain. A total of 2,870 patients were recruited from 60 chiropractic and 11 medical practice offices. The study demonstrated that VAS pain scores were lower for chiropractic patients than for medical patients (12.2 points lower at one month and 10.5 points lower at three months). Results were even greater for patients with concurrent leg pain. Thus, the authors concluded that **chiropractic patients with chronic and acute low back pain experienced greater relief up to one year following treatment**, and those with chronic low back pain showed a clinically important advantage in the short term.

Neck Pain

A special neck pain task force, commissioned by the Bone and Joint Decade (2000-2010), conducted a critical survey of the scientific literature published between 1980 and 2006. After extensive scholarly review, the task force recommended that **most patients with neck pain would benefit from manual therapies (mobilization, manipulation, and massage)** along with supervised exercises, low-level laser therapy, and perhaps acupuncture (Hurwitz et al., 2008).

A Cochrane systematic review of scientific literature addressing manipulation for neck disorders found that “mobilization and/or **manipulation when used with exercise are beneficial for persistent mechanical neck pain** with or without headache” (Gross et al., 2004).

Headache Pain

A randomized controlled trial reported by Tuchin, Pollard, and Bonello (2000) compared spinal manipulation (SMT) with a placebo treatment for migraine headache. In all, 22% of the SMT patients reported a greater than 90% reduction in their migraines. **The mean number of migraines per month dropped from 7.6 to 4.1 – and this in patients who, at the study’s beginning, had experienced migraine pain for an average of 18.1 years.** The SMT patients also reduced their medication use; many reported no need for medication after six months.

In 2003, Tuchin and Bonello reviewed three randomized controlled trials and four clinical trials of chiropractic treatment for migraine headaches. They concluded, **“Chiropractic SMT [spinal manipulative therapy] appears to have a similar effect to amitriptyline, and a greater effect than cervical mobilization in the improvement of standard migraine outcome measures”** (p. 363).

In his summary of a Cochrane Collaboration systematic review by Bronfort, Nilsson, and Evans, Grunnet-Nilsson (2003) stated that there is scientific evidence showing spinal manipulation’s (SMT) effectiveness for migraine treatment. His conclusions state that “chiropractors... can truthfully tell their patients that 14 sessions of spinal manipulation over an 8 week period is [sic] expected to reduce the number of migraine attacks by about 40%” (p. 75). While Grunnet-Nilsson’s summary also noted that evidence for using SMT for tension-type headaches is weaker (treatments of all types for this form of headache only sometimes help), strong evidence points to the effectiveness of SMT for cervicogenic headache: **“For practitioners of spinal manipulation and exercise therapy, this means that they are the only practitioners who can deal with cervicogenic headache on the basis of scientific evidence”** (p. 76).

Chiropractic Care for Other Disorders

Extremity Disorders

Over the past decade, the extremities have become increasingly recognized as an area responsive to manual therapy; moreover, reports indicate that upper and lower extremity problems account for about 20% of all chiropractic care (Cherkin et al., 2002; Christensen et al., 2005; Mootz et al., 2005). For instance, **a clinical trial concerning the shoulder girdle that compared usual medical care both with and without high-velocity low-amplitude manipulations revealed that spinal manipulation accelerated the recovery from shoulder symptoms** (Bergman, et al., 2004).

Two extensive literature reviews addressing chiropractic treatment of the lower extremities have recently been published (Brantingham, et al., 2009; Hoskins, McHardy, Pollard, Windsham, & Onley, 2006). **These reviews report considerable case evidencesupportingtheuseofmanipulative therapy for knee osteoarthritis, patellofemoral pain syndrome, and ankle inversion sprain, with some evidence for hip osteoarthritis.**

Non-musculoskeletal Disorders

Chiropractic care may also be beneficial in a variety of conditions that are not directly related to the musculoskeletal system. One example is seen in a 2002 review of chiropractic treatment in which Hughes and Bolton conclude that **“there is good evidence [for] taking a colicky infant to a chiropractor”** (p. 384).

The effects of chiropractic care on patients with high blood pressure have been reported from several studies. **While the specific results varied, they often revealed significant decreases in blood pressure following chiropractic care** (Bakris et al. 2007, Plaughner et al., 2002).

A systematic review of scientific literature identified 179 published papers that addressed chiropractic care for 50 different non-musculoskeletal conditions; 47 papers described experimental studies, including 14 randomized trials. Based on review of the controlled studies, **the authors determined that there was evidence of the benefit of chiropractic care for patients with asthma, cervicogenic vertigo, and infantile colic, and potential benefit for children with otitis media and elderly patients with pneumonia** (Hawk, Khorsan, Lisi, Ferrance, & Evans, 2007).

Chiropractic's role in prevention has recently been demonstrated in several studies. For example, **an on-site industrial chiropractic program resulted in significant reductions in days of lost time, costs per claim, rate premiums, and the number of surgeries** (Cooper & Pfefer, 2007). Importantly, another study involving two elite Australian Rules football teams randomly assigned to two groups (one receiving a chiropractic management program in addition to the standard therapies given to both groups) revealed that **chiropractic intervention resulted in fewer injuries to the hamstrings, lower limb muscles, and knees** (Hoskins & Pollard, 2007).

Other compelling data come from a study (Descarreaux, Blouin, Drolet, Papadimitriou, & Teasdale, 2004) of patients with chronic low

back pain who were randomly assigned to one of two groups. One received a chiropractic adjustment every three weeks beyond the 12 treatments given within the first month to both groups. **The group receiving the supplementary maintenance treatments continued to display reductions in disability, while the cohort lacking the additional visits reverted to baseline levels.**

Safety of Chiropractic Care

The most common adverse effects of chiropractic treatment are short-term soreness and/or a temporary increase in pain. **The likelihood of initial soreness or increased pain has been found to be similar to that of starting an exercise program** (Bronfort et al., 2001; Hurwitz, Morgenstern, Vassilaki, & Chiang, 2005).

A systematic review of the literature that retrieved numerous case studies, case-control, retrospective and prospective studies, surveys, and a randomized controlled trial from 1966-2007 indicated that **most adverse events that could be attributed to spinal manipulation were benign and transitory** (Gouvela, Castanho, & Ferreira, 2009).

An event sometimes attributed to chiropractic manipulation is a stroke associated with a vertebral artery dissection (Rothwell, Bondy, & Williams, 2001; Smith et al., 2003). However, in a recent study of 818 vertebral artery dissection (VAD) strokes in a hospitalized population of over 100 million person-years, Cassidy et al. (2008) demonstrated that **the association of strokes and visits to either chiropractors or**

primary care physicians was equal, suggesting that the cause of the strokes could not be associated with any element unique to chiropractic care. More likely, the strokes were already in progress and causing symptoms that prompted the patients to seek healthcare intervention.

Patient Satisfaction Research

Research in the vital area of patient satisfaction finds that doctors of chiropractic consistently receive high marks from their patients. Chiropractic management of spine disorders is often more successful than medical treatment; this results in higher levels of patient satisfaction. In a comparison study between doctors of chiropractic and medical practitioners, Nyiendo, Haas, and Goodwin (2000) found, **“Patients with chronic low back pain treated by chiropractors show greater improvement and satisfaction at 1 month than patients treated by family physicians. Satisfaction scores were higher for chiropractic patients”** (p. 239). A higher proportion of chiropractic patients in this study (56% vs. 13%) reported that their low back pain was better or much better, whereas more than one-third of medical patients reported their pain was worse or much worse (35% vs. only 14% for patients of chiropractors). Likewise, **90% of the chiropractic patients claimed satisfaction with their care, while only 52% of the medical patients reported the same**. The authors noted that such satisfaction with care likely results from typical chiropractic practices: increased information given to patients, increased concern for patients’ health, and a greater level of comfort and confidence in dealing with low back pain.

There is a growing body of research that documents patient satisfaction with the manner, care, and explanations of treatment by doctors of chiropractic (Coulter et al., 2003; Gemmell & Hayes, 2001; Hawk, Long, & Boulanger, 2001). The final report to the Department of Defense from its Chiropractic Healthcare Demonstration Project found that **participants who received chiropractic care strongly agree that they had good treatment results. They expressed more satisfaction with the chiropractor’s willingness to spend time with them, with explanations of treatments, and with health condition improvements compared to those who received medical care** (Birch & Davis Associates, 2000).

A survey of Canadian military personnel who were involved in a similar demonstration study investigating the inclusion of chiropractic care reported that **“the majority of military personnel (94.2%) and referring physicians (80.0%) expressed satisfaction with chiropractic services”** (Boudreau, Busse, & McBride, 2006, p. 574).

More recently, the final report of the Medicare Demonstration Project that was conducted from April 2005 to March 2007 found that **“Satisfaction with (chiropractic) care was high, with 87% reporting levels of 8 or higher on a 10-point scale and 56% indicating a perfect score of 10. Sixty percent of respondents indicated that they received “moderate” or “complete” relief from chiropractic treatments compared to 11% from treatments by other health professionals”** (Stason et al., 2010, p. 7).

The Cost-Effectiveness of Chiropractic Care

Studies of data from **workers' compensation claims show considerable savings when chiropractic costs were compared to care from medical providers or physical therapists** in Florida (Folsom & Holloway, 2002), Texas (MGT of America, 2003), North Carolina (Phelan, Armstrong, Knox, Hubka, & Ainbinder, 2004), and Oklahoma (MGT, 2005).

A 2004 study by Legorreta et al. concluded that **access to managed chiropractic care for back pain may reduce overall health costs because such care is more effective than traditional medicine and is less invasive**. Patients with chiropractic insurance coverage, compared to those without coverage, had lower annual healthcare costs (\$1,463 vs. \$1,671) per member year. Back pain patients had fewer radiographs, fewer back surgeries, fewer hospitalizations, and less magnetic resonance imaging.

Sarnat, Winterstein, and Cambron (2007) found that **admitting chiropractors into a healthcare plan as gatekeepers led to dramatic cost reductions**, exemplified by 59% fewer hospital days, 62% fewer outpatient surgeries, and 83% lower pharmaceutical costs.

The results of a study within the framework of Medicare indicated that **chiropractic care significantly reduces per beneficiary costs to the Medicare program** (Muse and Associates, 2001).

An in-depth analysis of 4 years of claims data from a managed care health plan found that **patients who had access to chiropractic care had fewer neuromusculoskeletal complaints than those without access; the chiropractic care was a direct substitution for medical care, not an additional cost** (Metz, Nelson, LaBrot, & Pelletier, 2004). This group also had a **significant reduction in the use of high-cost and invasive procedures for treatment of low back and neck pain** (Nelson, Metz, & LaBrot, 2005).

A more recent evaluation by economists of the cost-effectiveness of chiropractic care, the Mercer Report, concludes that **“When considering effectiveness and cost together, chiropractic physician care for low back and neck pain is *highly* cost-effective, [and] represents a good value in comparison to medical physician care and to widely accepted cost-effectiveness thresholds.”** (Choudry & Milstein, 2009). These researchers acknowledged that they were unable to capture and incorporate the costs of any prescribed drugs; as such, their estimate of the comparative cost-effectiveness of chiropractic care was very likely understated.

Qualifications for Practicing Chiropractic

In order to become a licensed doctor of chiropractic, an individual must meet stringent academic and professional requirements, which generally include passing nationally standardized examinations. Currently, an individual must

complete the following major steps in order to become a licensed chiropractor:

1. Complete required general college-level studies (Bachelor's degree required in some states);
2. Obtain a Doctor of Chiropractic degree and complete a clinical internship through an accredited four-year chiropractic college program;
3. Pass the National Board of Chiropractic Examiners' and/or other state-required examinations; and
4. Satisfy any other individual state-specific requirements for licensure.

Chiropractic Training

Government inquiries, as well as independent investigations, affirm that today's chiropractic academic training is of equivalent standard to medical training in all pre-clinical subjects. The Council on Chiropractic Education (CCE) and its Commission on Accreditation, as recognized by the U.S. Department of Education, maintain high standards in chiropractic education.

Postdoctoral training in a variety of clinical disciplines and specialties is available through accredited colleges and specialty councils.

Postgraduate specialty programs include:

- Family Practice
- Clinical Neurology
- Forensics

- Clinical Nutrition
- Occupational Health
- Acupuncture
- Sports Chiropractic
- Applied Chiropractic Sciences
- Orthopedics
- Pediatrics
- Physical Fitness & Rehabilitation
- Diagnostic Imaging
- Internal Disorders

Chiropractic Licensing

Chiropractic is one of many occupations that is regulated by state licensing agencies. The requirements for chiropractic licensure vary from state to state (and country to country).

To assist the various regulatory agencies in assessing candidates for licensure, the National Board of Chiropractic Examiners (NBCE) develops and administers pre-licensure examinations as follows:

- ***Part I (six exams titled as listed below)***
 - General Anatomy
 - Spinal Anatomy
 - Physiology
 - Chemistry
 - Pathology
 - Microbiology

- **Part II (six exams titled as listed below)**
 - General Diagnosis
 - Neuromusculoskeletal Diagnosis
 - Diagnostic Imaging
 - Principles of Chiropractic
 - Chiropractic Practice
 - Associated Clinical Sciences
- **Physiotherapy (an elective)**
- **Acupuncture (an elective)**
- **Part III (one exam addressing the areas listed below)**
 - Case History
 - Physical Examination
 - Neuromusculoskeletal Examination
 - Radiological Examination
 - Clinical Laboratory and Special Studies Examination
 - Diagnosis or Clinical Impression
 - Chiropractic Techniques
 - Supportive Techniques
 - Case Management
- **Part IV**

An objective structured clinical examination including patient-centered skills, clinical judgment, and patient care

NBCE post-licensure examinations are also used by regulatory agencies as follows:

- ***Special Purposes for Chiropractic Examination (SPEC)***

An examination taken at the direction of a state licensing board for those seeking reciprocity or endorsement, for those who are returning to practice after an extended absence, or for those under state discipline

- ***Ethics and Boundaries (E&B)***

An examination taken at the direction of a state licensing board for those who are subject to certain disciplinary processes

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