

The National Board of Chiropractic Examiners (NBCE) publishes research reports based on extensive surveys of chiropractic practitioners. The surveys and their subsequent reports are titled *Job Analysis of Chiropractic*. Included in the job analysis is an extensive review of literature.

Following the first job analysis, the National Board received numerous requests for permission to reproduce portions of the literature review. In response to those requests, the NBCE produced a condensed version of the literature review. This brochure includes portions of the literature review in *Job Analysis of Chiropractic 2005*.



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Table of Contents

The Growing Prominence of Chiropractic Care	1
Back Pain	3
Neck Pain	7
Headache Pain	9
Chiropractic Care for Other Disorders	12
Asthma	12
Infantile Colic	12
Premenstrual Syndrome	13
Fibromyalgia	13
The Cost-Effectiveness of Chiropractic Care	14
Qualifications for Practicing	
Chiropractic	16
Chiropractic Training	16
Chiropractic Licensing	17
Works Cited	18

The Growing Prominence of Chiropractic Care

During the last two decades, the attitudes of health professionals and consumers have evidenced a positive change in the ways they view chiropractic care. The general public increasingly seeks the hands-on, personal treatment provided by chiropractors. Haldeman (2001) asserts that this growing acceptance stems from chiropractors' caring and sympathetic treatment that is low cost, low risk, and non-invasive.

Eisenberg et al. (1998) noted that 42.1% of the U.S. population had sought some form of non-traditional medical care, most commonly chiropractic, surpassing the number of visits to traditional medical physicians. Such patient preference for chiropractic health care is also reflected in insurance coverage. A Stanford University School of Medicine study (cited in Meeker 2000) showed that 55% of chiropractic care is covered by insurance and that 57% of insurance consumers believe such insurance coverage should be provided. Congress has also increased Medicare coverage for senior citizens seeking chiropractic care as well as increasing chiropractic care benefits for American military personnel.

The need for chiropractic care in America's health care system can be illustrated by the economic impact of back and neck pain alone, two of the most common complaints for which patients seek chiropractic care (Christensen and Kollasch 2005):

- Back pain affects 60% to 80% of the U.S. population, with an estimated cost between \$20 and \$50 billion dollars each year – in health

costs, lost workdays, and decreased production (cited in Palmieri and Smoyak 2002).

- A more recent study (2004) puts the annual health care costs for back pain at \$100 billion (Legorreta et al.).
- Due to the effectiveness of chiropractic care for back pain (see the studies later in this pamphlet), nearly one-third more back pain sufferers seek chiropractic care than they do care from traditional medical doctors (cited in Hertzman-Miller et al. 2002).
- Studies show that 50% to 70% of U.S. residents experience neck pain at least once in their lives, with as many as one-third affected each year (cited in Hurwitz, Morgenstern, Harber et al. 2002).

The government's and the public's growing acceptance of chiropractic care is well supported by scientific evidence. Contained herein are recent studies (since 1998) that demonstrate the effectiveness of chiropractic care for back, neck, and headache pain, as well as for asthma, colic, fibromyalgia, premenstrual syndrome, and carpal tunnel syndrome. Many of these studies also report patients' satisfaction with their chiropractic care.

Back Pain

In 1999, Giles and Muller conducted a pilot trial comparing acupuncture, a nonsteroidal anti-inflammatory drug, and spinal manipulation for the treatment of chronic spinal pain. Visual Analogue Scale (VAS) results showed that pain intensity was reduced significantly only in the spinal manipulation group. In addition, many patients in the acupuncture or drug-use group – due to side effects or a lack of treatment effectiveness – elected to change their treatment to spinal manipulation. The authors concluded that those in the manipulation group displayed the most significant improvements and that **spinal manipulation “has an important role to play in the treatment of spinal pain syndromes”** (p. 380).

Reported in the *Journal of Manipulative and Physiological Therapeutics*, McMorland and Suter studied the records of 119 patients in a typical chiropractor’s office. Each patient suffered from uncomplicated neck or low-back pain. The treatment records showed that low-back pain patients experienced a 52.5% reduction in pain and a 52.9% reduction in disability. The neck pain group displayed similar positive results with a 53.8% reduction in pain and a 48.4% reduction in disability. **The study demonstrated that under chiropractic care, patients with mechanical neck pain and/or low-back pain show significant improvement.**

Nyiendo, Haas, and Goodwin evaluated the one-month outcomes for patients with chronic low-back pain when treated with spinal manipulation or anti-inflammatory drugs. The patients (93 in the manipulation group and 45 in the drug-use group)

came from the practices of 45 chiropractors and 33 medical physicians in the Portland, Oregon area. The one-month follow-up demonstrated that the chiropractic patients showed a five times greater improvement than that of the medical patients on the Visual Analogue Scale (VAS), with the chiropractic patients also reporting better results in diminished pain. 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.

A corroborating study by Hertzman-Miller et al. (2002) also found that low-back pain sufferers were more satisfied with chiropractic care than with traditional medical treatments. The authors suggested that providers who communicate well and often "**...demonstrate more concern for their patients as individuals or encourage patients to take a more active role in their own care – characteristics often attributed to chiropractors**" (p. 1633).

In 2003, Giles and Muller conducted another randomized controlled trial to assess the effectiveness of spinal manipulation, medication, and acupuncture for the treatment of chronic spinal pain. The results for patients receiving chiropractic care were impressive, with improvement of 18% to 50% on eight common measurements. The most significant finding, perhaps, was that **manipulation patients experienced the greatest short-term benefits, in spite of the fact that they had the longest pre-treatment duration of pain (8.3 years**

average), yet 27% recovered in a nine-week period or less. Overall results of the study showed that 47% of chiropractic patients improved, while only 18% and 15% improved in the medication and acupuncture groups respectively.

Published in *Spine*, Aure et al. (2003) compared the effects of manual therapy (such as chiropractic) to those of exercise therapy in the treatment of low-back pain. The mean reduction in pain in the manual therapy group was twice that of the exercise group, and the manual therapy group also showed greater improvements in pain, disability, general health, spinal range of motion, and return to work. In fact, after the two-month treatment, **67% of the manual therapy group had returned to work, while only 27% of the exercise group had done so.**

Also published in *Spine*, a study by Niemisto et al. (2003) compared the effectiveness of patients with chronic low-back pain who received only physician consultation with those patients with chronic low-back pain who were treated with the combination of spinal manipulation, exercises, and physician consultation. At 5- and 12-month follow-ups, the manipulation group demonstrated significantly greater reductions in pain and disability than the control group, allowing the authors to conclude that **manipulative therapy is superior to consultation alone and that short, specific treatments may change the course of chronic low-back pain.**

In their 2003 study, Hayden, Mior, and Verhoef examined the effects of chiropractic treatments on pediatric patients (ranging from 4 to 18 years old), most of whom suffered from low-back pain due to sports injuries. **After only seven days of treatment, 40% of these patients reported their symptoms**

“much improved,” and this increased to 82% at 30 days and 87% at 45 days. The authors concluded that younger patients respond favorably to chiropractic treatment for low-back pain.

In 2004, Haas, Goldberg, Aickin et al. 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 (Visual Analogue Scale) scores were lower for chronic low-back pain 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

In a study published in the *Journal of Manipulative and Physiological Therapeutics*, West et al. (1998) studied the efficacy of cervical manipulation under anesthesia (MUA) for the treatment of neck and other spinal pain. The results showed that **neck pain sufferers improved by 62.2% on the Visual Analogue Scale (VAS), had a 58.4% reduction in prescription pain medication use (24% required no medication at all after six months)**, and most out-of-work patients returned to work six months after MUA.

Bronfort, Evans, and Nelson et al. (2001) demonstrated the effectiveness of a multidisciplinary approach to neck pain treatment. Patients who received both spinal manipulation and exercise treatment improved significantly over the course of the study. This study was replicated in 2002 and again showed that **a combination of exercise and spinal manipulation effectively reduced patients' neck pain**. The authors recommended this multidisciplinary treatment for neck pain sufferers, especially if future cost-effectiveness studies prove positive.

In 2001, Whittingham and Nilsson conducted a randomized controlled trial to study the effect of spinal manipulation on cervical range of motion (a common problem among neck pain sufferers). The authors **concluded "a consistent and statistically significant increase in active range of motion in the cervical spine after manipulation."**

Published in the *Annals of Internal Medicine*, a study by Hoving et al. (2002) compared the efficacy of manual therapy, physical therapy, and continued care by a general practitioner for neck pain. After

seven weeks, the manual therapy patients experienced neck pain relief of 68.3%, while the physical therapy and general care patients experienced only a 50.8% and 35.9% relief respectively. The authors concluded, **“We found that manual therapy was more effective than continued care [by medical doctors], and our results consistently favored manual therapy on almost all outcome measures”** (p. 720).

Korthals-de-Bos et al. (2003) published a study in the British Medical Journal that evaluated the effectiveness of manual therapy, physiotherapy, and general practitioner care for neck pain – as well as to compare costs for the three treatment types. Manual therapy proved most effective of the three treatments, with manual therapy patients experiencing a 68% recovery rate and the lowest drug use. The physical therapy and general practitioner patients experienced only a 51% and 36% recovery rate respectively. Most impressive, however, was that **not only was manual therapy most effective in treating neck pain, but the total costs for this treatment were about one-third of those for the other two treatments.**

Headache Pain

In 1998, Nelson et al. compared the effectiveness of spinal manipulation (SMT), amitriptyline (a common headache medication), and a combination of the two treatments for migraine. At the four-week follow-up period, SMT patients demonstrated a 42% reduction in migraine pain, compared to only 24% and 25% for the amitriptyline and combined treatment patients. The authors concluded, **“Spinal manipulation seemed to be as effective as a well-established and efficacious treatment (amitriptyline), and on the basis of a benign side effects profile, should be considered a treatment option for patients with frequent migraine headaches”** (p. 518).

Tuchin (1999) assessed the efficacy of spinal manipulation for migraine headache. **All 32 patients in the study showed statistically significant improvements in migraine frequency, Visual Analogue Scale readings, disability, and medication use.** These improvements continued at the six-month follow-up.

In a randomized controlled trial, 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 better 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 of whom lowered their medication use to zero after six months. Since 83% of the patients in this study reported stress as a major factor in their migraines,

the authors concluded, "It appears probable that chiropractic care has an effect on the physical conditions related to stress and that in these people the effects of the migraine are reduced" (p. 94).

In an influential study conducted at the Duke University Evidence-based Practice Center, McCrory et al. (2000) assessed evidence from a large number of randomized controlled trials for the effectiveness of spinal manipulation (SMT) and other treatments for tension-type and cervicogenic headaches. The study showed that SMT resulted in a 49% decrease in headache severity compared to no change in rest period groups. Also, when compared to soft-tissue therapy (massage), **SMT reduced headache frequency by 69% and severity by 36%, compared to the respective soft-tissue reductions of 37% and 17%. SMT also showed better results than did the commonly prescribed amitriptyline.** The study showed that 82% of amitriptyline patients reported adverse effects from the drug, while only 4% of SMT patients reported adverse effects.

Bronfort, Assendelft et al. (2001) reviewed randomized controlled trails to assess the effectiveness of spinal manipulation (SMT) for chronic headache. The review showed moderate evidence that spinal manipulation is more effective than massage for cervicogenic headache and more effective than amitriptyline for chronic tension-type and migraine headaches. **The study's findings "provide a basis for considering SMT in the therapeutic management of migraine, chronic tension-type and cervicogenic headaches"** (p. 462).

Published in *Spine*, a study by Jull et al. (2002) examined the efficacy of manipulative therapy and a low-load exercise program (used alone or in

combination) for cervicogenic headache. The authors concluded that **manipulative therapy and exercise effectively reduce the symptoms of cervicogenic headache both short and long term.**

In 2003, Tuchin and Bonello reviewed three randomized controlled trials and four clinical trials of chiropractic treatment to other treatments for migraine. 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, concluding **“chiropractors...can truthfully tell their patients that 14 sessions of spinal manipulation over an 8 week period is expected to reduce the number of migraine attacks by about 40%”** (p. 75). While 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

Asthma

At the Ninth International Conference on Spinal Manipulation held in Toronto, Canada in 2002, an investigative team headed by Ray Hayek, Ph.D., reported on a trial involving 420 asthma patients to examine the effects of spinal manipulation on the symptoms, depression, general health, and levels of immunity in these patients. **The spinal manipulation patients experienced significant improvement, including increases of IgA and decreases of cortisol, indicating that chiropractic treatment helps increase immunological capacities.**

Infantile Colic

Wiberg, Nordsteen, and Nilsson (1999) demonstrated the effectiveness of spinal manipulation for infantile colic. Some patients in the study received dimethicone, and others received spinal manipulation. All manipulation patients completed the study, while more than one-third of the dimethicone group withdrew due to worsening conditions. **The manipulation group showed a 67% reduction in colic symptoms, compared to only a 38% reduction in the dimethicone group.**

In a study comparing two infantile colic studies (including the Wiberg study above), Hughes and Bolton found that good evidence exists for taking a colicky baby to a chiropractor. They concluded, **“In this clinical scenario where the family is under significant strain, where the infant may be at risk of harm and possible long term repercussions, where there are limited alternative effective interventions, and where the mother has confidence in a chiropractor from other experiences, the advice is to seek chiropractic treatment”** (p. 384).

Premenstrual Syndrome

In two related studies, Walsh and Polus (1999) first determined that premenstrual syndrome (PMS) sufferers often experience underlying spinal dysfunction. The authors theorized that this dysfunction might be associated with PMS and that correction of the dysfunction could reduce PMS symptoms. Later that same year, the authors conducted a randomized clinical trial to determine the effectiveness of chiropractic care on PMS symptoms. They found that **PMS sufferers did indeed improve after spinal manipulation, with over half of participants showing significant improvement.**

Fibromyalgia

In 2000, Hains and Hains studied a combination of ischemic compression and spinal manipulation for the treatment of fibromyalgia symptoms: pain, sleep disturbance, and fatigue. **The study's participants showed significant lessening of pain (77.2%), improvements in sleep quality (63.5%), and lessening of fatigue (74.8%).** These results were maintained after one month without further treatment, so the authors concluded that chiropractic care has potential in treating fibromyalgia.

The Cost-Effectiveness of Chiropractic Care

In 2002, Stano et al. compared the relative costs for chiropractic care and medical treatments for those suffering from low-back pain. The authors found the mean costs for chiropractic care to be \$214, compared to \$123 for medical care. However, the costs for medical treatment did not reflect those for patients referred to other providers, the costs for prescription drugs, or the costs for surgery which, when adjusted to the year 2000 prices, averaged \$18,000. Thus, in the larger view of patient costs, chiropractic care appears more cost-effective.

Korthals-de Bos et al. (2003) evaluated the effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain. The manual therapy group experienced the greatest recovery rate, and reported fewer lost workdays and lower direct and indirect costs at one year after therapy. In short, not only was manual therapy more effective, but the total costs were around one-third of those for the other two treatment types.

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 health care 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.

In spite of studies showing that chiropractic is the most effective procedure in dealing with back and neck pain, according to the Medical Expenditure Panel Survey, Agency for Healthcare Research and Quality, out of \$1,210,700,000,000 spent on national health care in 1999, only \$3,188,000,000 (0.26%) went to chiropractic care, or about one-fourth of one percent.

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 two or more years of general college-level studies (Bachelor's degree required in some states);
2. obtain a Doctor of Chiropractic degree and complete a clinical externship through an accredited four-year chiropractic college program;
3. pass the National Board of Chiropractic Examiners' and/or other state-required examinations;
4. satisfy any other individual state-specific requirements for licensure.

Chiropractic Training

Government inquiries, as well as independent investigations, have affirmed 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. Post-graduate programs include:

Applied Chiropractic Sciences
Family Practice
Industrial Consulting
Neurology
Nutrition
Orthopedics
Pediatrics
Radiology
Rehabilitation

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). Some states require a Bachelor's degree as a prerequisite for licensure.

To assist the various regulatory agencies in assessing candidates for licensure, the National Board of Chiropractic Examiners (NBCE) develops and administers examinations to individuals currently in the chiropractic educational system or who have completed a chiropractic education program. The NBCE also offers examinations designed for previously licensed individuals. A candidate eligible for licensure may request that transcripts of scores from NBCE examinations be forwarded to licensing agencies.

Scores from NBCE examinations are made available to licensing agencies throughout the United States and to many licensing authorities outside the United States.

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