CHIROPRACTORS

Brian J. Gleberzon

Chiropractors

INTRODUCTION

Chiropractors focus primarily on treating back pain and eschew the use of pharmaceuticals and surgical interventions. Instead, they use a variety of conservative, manual therapies to achieve important clinical outcomes with an enviable safety record. The manual therapy most associated with chiropractic is spinal manipulative therapy (SMT) or, more broadly, spinal adjusting.

It is a difficult profession to describe because its members tend to self-identify by *how they think* rather than *what they do*, and a diversity of ideologies has led to a diversity of practice styles (Meeker & Haldeman, 2002). As a result, it would be an over-simplification to characterize chiropractic exclusively by its method of therapy, in much the same way it would be an over-simplification to characterize dentists as tooth-drillers and cavity-fill.

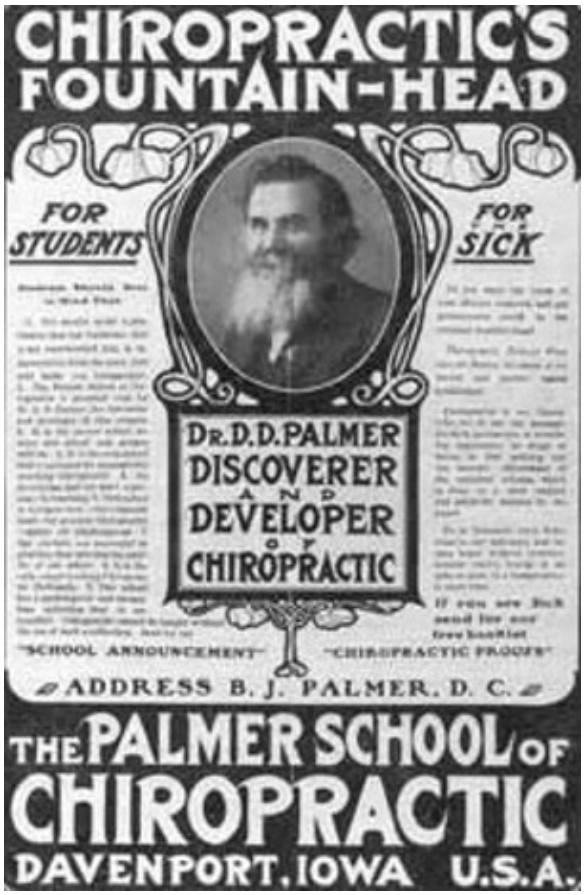
HISTORY OF THE PROFESSION

The act of manipulating the spine to improve health has its roots in antiquity and was preserved by 19th-century European bone-setters who later brought it with them when they emigrated to North America (Keating, 2003). Other factors that influenced the development of chiropractic over the years included magnetic healing, orthodox science and popular health reform (Kaptchuk & Eisenberg, 1998).

Daniel David (D.D.) Palmer is considered the "father" of chiropractic. Born in Port Perry, Ontario, he began his career in Davenport, Iowa, as a magnetic healer (Keating, 2003). The epochal event of the chiropractic profession took place on September 18, 1895, in Palmer's Davenport office, when he, as the story goes, restored the hearing of Harvey Lillard, an African American janitor who had been deaf for 17 years, by adjusting his midback.

Palmer claimed to be "the first to replace displaced vertebrae by using the spinous and transverse processes as levers, wherewith to rack subluxated vertebrae into normal position [...] revolutioniz[ing] the theory and practice of the healing arts" (Keating, 2003). In 1897, he opened the Palmer School of Chiropractic (PSC), the first such school. In its first year, the six-month program accepted five students, all medical doctors or osteopaths, and taught them how to manipulate all articulations of the body, with an emphasis on the spine (Keating, 2003).

Palmer's most influential theory, the "bone-out-of-place" model, is still used today. This theory holds that bones of the spine (and the feet) pinch nerves when out of place, thereby altering the flow of nerve impulses to the organs they innervate (Keating, 2003; Keating, Cleveland, & Menke, 2004). A chiropractor's role, therefore, is to identify and correct the bones that were pinching the nerves, allowing the unfettered flow of life energy (Keating, 2003).



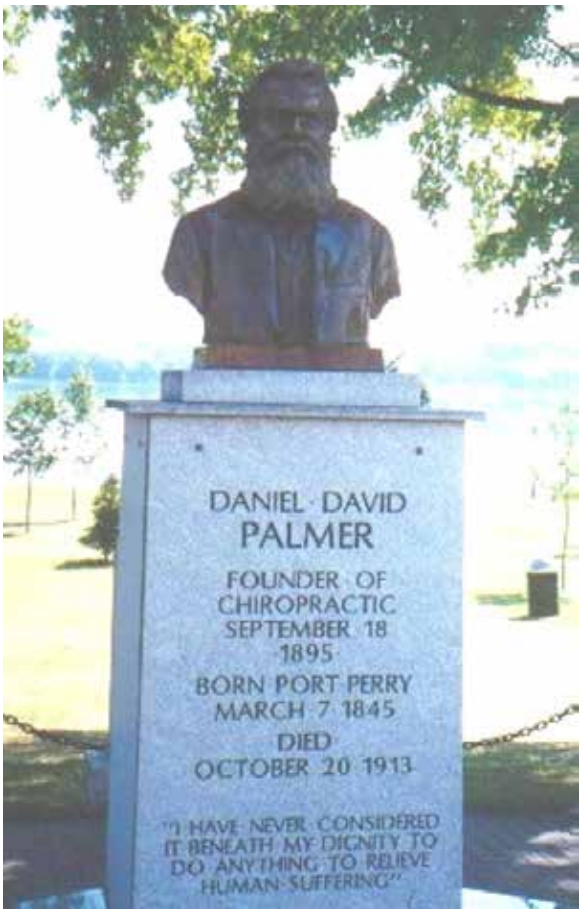
Advertisement for the Palmer School of Chiropractic

B.J. Palmer, circa 1910

In 1908, Bartlett Joshua (B.J.) Palmer assumed ownership of the PSC from his father. He continued with the belief that "innate nerves control the vital function of assimilation, circulation and respiration, sleep and awake. Every act and thought is controlled by nerves, they furnish life to the body. Diseases are but the result of impinged nerves" (Keating, 2003).

B.J. Palmer was one of chiropractic's most divisive figures. Although a strident advocate for the profession, he was also seen as obstinate and incurred considerable disdain from other chiropractors for a number of his beliefs and practices. He maintained a dogmatic adherence to a vitalistic model, and used both x-rays and a device he called the "neurocalometer" to detect and identify subluxation (mechanical or functional disorders of the spine). His movement from full spine adjustment to an exclusive focus on the upper cervical spine (C1 or the atlas) was also unpopular (Keating, 2003; Kaptchuk & Eisenberg, 1998; Keating, Cleveland, & Menke, 2004; Montgomery & Nelson, 1995).

D.D. Palmer rejected B.J.'s notion that nerves could be impinged or compressed and instead came to embrace a tonal-based model, which holds that the spinal cord, like a guitar string, should vibrate at a particular frequency that can be altered by subluxation.



Monument to D.D. Palmer in Port Perry, Ontario

The relationship between the two became acrimonious and remained so until the end, culminating in allegations that B.J. drove over his father during a PSC homecoming parade. A plaque commemorating the place of D.D. Palmer's birth in Port Perry bears one of his most enduring expressions: "I have never considered it beneath my dignity to do anything to relieve human suffering."

By the end of the Second World War, what are now known as the "Palmer Postulates" were established (Nelson et al., 2005). They are:

1. There is a fundamental and important relationship (mediated through the nervous system) between the spine and health.
2. Subluxation can degrade health.
3. Correction of spinal disorders (by spinal adjustment) may bring about a restoration of health.

CHIROPRACTIC IN CANADA

In the early days of chiropractic in Canada, organized medicine made a concerted effort to not only prohibit individual medical doctors from working with chiropractors, but to eliminate the chiropractic profession altogether. As unregulated healthcare providers, Canadian chiropractors at the turn of the 20th century could be jailed for practising medicine without a licence, although this was more common in the United States.

Working more cooperatively than their American colleagues, Canadian chiropractors later in the 20th century were successful in obtaining legislative recognition, achieving the privilege of self-regulation and becoming integral players in the healthcare delivery system (Sutherland, 1993). Chiropractic critics and sceptics remain very active, publicly chastising chiropractors' web pages and social media posts for various alleged transgressions. Some of the more controversial contemporary issues are described in detail toward the end of this chapter.

EDUCATION AND TRAINING

Roughly 80% of all Canadian chiropractors are graduates of the Canadian Memorial Chiropractic College (CMCC), the only English-speaking chiropractic college in the country. Established in Toronto in 1946, CMCC is a private, not-for-profit organization, with roughly 80% of its operating budget derived from student tuition. CMCC has sought university affiliation since the 1970s, but all efforts have so far been unsuccessful (Sutherland, 1993). The CMCC has entered several joint initiatives and programs with other institutions, such as Ontario Tech University and the University of Toronto.

Each year, CMCC admits 200 students from the more than 700 applications it receives. At a minimum, applicants to CMCC must have obtained a four-year undergraduate degree from an accredited university. Most have a background in kinesiology or a related health field.

CMCC's 4,200-hour academic program is divided into three undergraduate years that run from August to May and a fourth year that spans a full calendar year, during which interns treat patients under the direct supervision of a licensed chiropractor. At the time of this writing, tuition was roughly $25,000 per year.

During their undergraduate training, chiropractic students take courses common to all healthcare providers: anatomy, physiology, pathology and so on. Laboratory and small group courses include clinical diagnostic skills (e.g., blood pressure, auscultation of heart and lungs), orthopedic and neurological testing procedures, and courses specific to chiropractic manual skills (e.g., palpation, mobilization,

Canadian Memorial Chiropractic College

manipulation of the spine and peripheral joints), which now include training using force-sensing tables (Triano et al., 2013). There are courses that focus on the management of special populations (e.g., children, seniors) as well as courses in rehabilitation, radiography, emergency care, ethics and jurisprudence. CMCC also offers two-year post-graduate residency programs in advanced radiology, clinical sciences, rehabilitation and sports injuries.

CMCC emphasizes an evidence-based approach to healthcare. It teaches the Palmer Postulates and subluxation-based care models from a historical rather than a clinical perspective and is a signatory to an international position statement embracing this educational approach.[1]

To earn their licences, program graduates must complete national board exams as well as a provincial legislative and ethics examination. To maintain licensure, they must pay annual dues; meet continuing education requirements; periodically undergo peer review; maintain malpractice insurance; and adhere to all regulations, standards of practice, guidelines and policies set out by legislation.

The only other Canadian chiropractic program is affiliated with the Université du Québec à Trois-Rivières. It is similarly structured to the CMCC program but is offered in French.

SCOPE OF PRACTICE[2]

Although sometimes referred to as primary healthcare providers, chiropractors fit more specifically into the category of primary contact portal of entry, similar to dentists or optometrists. "Primary contact" means a person can see a chiropractor without a referral from another healthcare provider. "Portal of entry" means a chiropractor may assess, diagnosis and triage patients as they deem appropriate, essentially providing an entry point for patients into the healthcare delivery system. Triage options include managing patients' problems independently, co-managing patients or referring patients to other healthcare providers. In some cases, chiropractors may continue to provide conservative care even for patients who are also under the care of other specialists.

Ian Coulter, a sociologist and past president of CMCC, posited that chiropractors of all ideological stripes should adhere to six common tenets: conservatism, naturalism, holism, rationalism, humanism and vitalism (Coulter, 1999). He also distilled what he believed to be the four core general principles of chiropractic:

1. Health is a natural state of being and not merely the absence of disease. The body has an innate ability to restore and maintain health, and departure from health represents a failure to adapt to a person's surroundings.
2. Health is an expression of biological, psychological, social and spiritual factors.
3. Optimal health is unique to each individual and is a realistic fulfillment of that person's full potential. An individual is responsible for their own health; the doctor is a facilitator working in cooperation with the patient using education and compliance with healthful lifestyle choices.
4. The structure and function of the neuro-musculoskeletal system is very important to good health.

Most chiropractors adhere to the doctrines of evidence-based medicine (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996), which champions the co-equal pillars of:

1. Best available research evidence
2. Clinical expertise
3. Patient values

Some chiropractors also adhere to the Palmer Postulates. Others rigidly embrace a pain-based model. This means that, although they adopt similar approaches (i.e., a preference for conservative,

1 For the full text of the position statement, see https://www.cmcc.ca/documents/icec-position-statement-backgrounder-and-q-and-a.pdf
2 For the purposes of this chapter, "scope of practice" will describe the various ideologies or philosophies chiropractors embrace, rather than the scope of practice from a legal perspective that sets out what a chiropractor can and cannot do according to legislation in each jurisdiction.

manual therapies) chiropractors hold diverse underlying views about how the body works. Chiropractors who strictly adhere to the Palmer Postulates champion "classic" vitalism and a subluxation-based model. They often refer to themselves as "principled". Chiropractors who reject the Palmer Postulates believe in "modern" vitalism (as do the majority of healthcare providers across all disciplines today) and refer to themselves as "evidence-based" or "symptom-based".

In general, the most commonly used therapies by chiropractors are based in science and have a reasonable physiological rationale. In addition to therapies unique to chiropractic, chiropractors typically also provide stretching, exercise, ergonomic and general healthy lifestyle advice. One study found that roughly one-third of patients receive formal patient education of some kind (Beliveau et al., 2017).

A minority of chiropractors use therapies that rely on metaphysical rationales outside the realm of normal science. A 2014 study reported that around 20% of chiropractors held what they defined as "unorthodox" perspectives of the conditions they treat (McGregor, Puhl, Reinhart, Injeyan, & Soave, 2014). Those with the most extreme unorthodox views believed subluxation was an obstruction to human health, were more likely to use radiographic imaging not consistent with current evidence and guidelines, and were more likely to hold negative attitudes about vaccination. These attitudes often reflect the chiropractic program of graduation (Puhl et al., 2014).

By contrast, 81% of respondents identified themselves with a biomechanical model of joint dysfunctions (McGregor et al., 2014). Among that group, 53.1% said they exclusively treated musculoskeletal (MSK) or neuro-musculoskeletal (NMSK) problems such as low

CHIROPRACTIC'S UNIQUE LEXICON

The chiropractic profession uses a unique lexicon. Chief among the terms unique to chiropractic is **subluxation**. Subluxations are the primary clinical targets for chiropractic intervention, similar to how dental cavities are the targets for dentists. Once identified, a subluxation is corrected using a spinal manipulation (or for traditional-minded chiropractors, a spinal adjustment, a distinction to be discussed below) or a range of other therapeutic interventions.

In general, there are three overarching models of chiropractic: functional, structural and tonal.

The **functional** model focuses on joints that are stuck or not moving through their full, normal anatomical ranges of motion. There is considerable evidence that chiropractors are able to palpate joint stiffness and that is an effective method of finding the clinical target, especially when combined with pain on palpation.

The **structural** model focuses on bones that are out of place. Using visual inspection, palpation and radiography, a chiropractor examines spinal joints for joint asymmetry and applies treatment intended to re-establish normal spinal alignment.

The third model, favoured by those who adhere to a more traditional chiropractic paradigm and embrace the Palmer Postulates, is a **tonal** model that likens the spinal cord to a guitar string that has a normal vibratory frequency. In the presence of a subluxation, this frequency is altered and is detectable by specific pieces of equipment such as the Subluxation Station, a descendent of the neurocalometer (this testing is referred to as thermography). This model holds that subluxations can exist only in spinal joints and are referred to as vertebral subluxation complex.

Lastly, some chiropractors shun the word subluxation altogether because it has so many different meanings and because they consider it anachronistic and meaningless, representing an overly vague diagnostic entity; instead, they prefer joint dysfunction.

Source: Cooperstein & Gleberzon, 2001

back or neck pain. This group was more likely to adhere to clinical practice guidelines for the judicial use of radiographs and hold positive attitudes toward vaccination (McGregor et al., 2014). The distribution of Canadian chiropractors across these two philosophical camps has remained consistent since at least the 1990s (Biggs, Hay, & Mierau, 1997).

Although they focus primarily on NMSK conditions, chiropractors may recommend a short trial of chiropractic care for non-NMSK conditions such as asthma, gastric reflux and urinary incontinence (Kaminskyi, Frazier, Johnstone, & Gleberzon, 2010; Angus, Asgharifer, & Gleberzon, 2015; Hains, Hains, Descarreaux, & Bussières, 2007). A series of systematic reviews have found fair to good evidence supporting this approach, often in combination with conventional medical care or in cases where conventional medicine has failed.

Despite these findings, many scholars argue chiropractic can achieve cultural authority only by focusing exclusively on spinal care (Sutherland, 1993; Nelson et al., 2005; Murphy, Schneider, Seaman, Perle, & Nelson, 2008; Villanueva-Russell, 2011; Schneider, Murphy, & Hartvigsen, 2016). Many systematic reviews, randomized clinical trials and cohort trials have demonstrated the clinical effectiveness of chiropractic care for low back and neck pain, certain types of headaches, and various ailments of the peripheral joints. This has resulted in spinal manipulative therapy (SMT) being included in clinical practice guidelines worldwide for the management of these clinical conditions.

INITIAL VISIT AND DIAGNOSIS

Upon intake, a chiropractor conducts a patient history (interview) and physical examination. To find the clinical target (i.e., where they will direct therapy), chiropractors use both direct and indirect assessment methods. Direct methods of assessment include palpation (static and motion palpation used to elicit pain or identify joints not moving through their complete ranges of motion), postural observation and orthopedic testing (as taught at any medical, kinesiology or physiotherapy program) to stress joints, muscles and discs (Triano et al., 2013). Indirect methods used by chiropractors include thermography, leg length analysis, x-ray line marking and non-orthopedic manual muscle testing (Cooperstein & Gleberzon, 2001; Triano et al., 2013).

Leg length analysis is predicated on the theory that spinal subluxations result in torsion of the hemipelvis, thus altering relative leg lengths when observed with the patient prone or supine. Some technique systems have a "cookbook" algorithm that allows a chiropractor to sequence the order of spinal regions to be treated based on leg length, although no research has been published to support that this alters patient clinical outcomes. X-ray line marking is also used to identify subluxations and calculate optimal lines of drive to correct them. Current evidence does not support the validity of thermography or x-ray line marking as diagnostic methods (Cooperstein & Gleberzon, 2001; Triano et al., 2013).

In non-orthopedic manual muscle testing, the chiropractor provokes a spinal joint and tests a convenient muscle to observe whether the provocation resulted in a change in the muscle's ability to resist downward pressure (Cooperstein & Gleberzon, 2001). Current evidence does not support the validity of this diagnostic approach (Triano et al., 2013).

After the history and physical examination are completed, the chiropractor provides a report of findings, which gives the patient a diagnosis, prognosis and proposed plan of management. Informed consent must be obtained from the patient before any form of treatment is started.

Once a patient has recovered from their chief complaint, they can be dismissed from care or they can opt to enter a supportive or maintenance care plan (similar to regular visits to a dentist) even in the absence of pain. Clinical trials have reported that patients experienced fewer "troublesome" days throughout a year under a chiropractic maintenance schedule of care (Eklund et al., 2018).

CHIROPRACTIC TREATMENT

Most chiropractors use the diversified technique, which is a generic, thrusting procedure directed to the spine and peripheral joints with the patient positioned prone, supine, side-lying or seated. SMT is a complex, bimanual motor skill involving various levels of inter-limb coordination and postural control combined with timely weight transfer (Triano, Giuliano, McGregor, & Howard, 2014). Chiropractors are very adept at modifying the forces delivered to patients based on their relative size, coexisting pathologies and structural weaknesses (Triano et al., 2014). Studies report 80% of patients receive SMT (Beliveau et al., 2017).

Alongside SMT, chiropractors often use drop tables, distraction tables, pelvic blocking and instrument-assisted adjustments using a device such as an activator. Less frequently, chiropractors use low-force techniques such as Atlas Orthogonal, Logan Basic and Network Spinal Analysis (Cooperstein & Gleberzon, 2004).

EVIDENCE OF EFFECTIVENESS

Back pain is the most common non-psychiatric cause of disability worldwide, especially in lower socioeconomic areas. An estimated 11 million Canadians experience NMSK or MSK conditions annually, and one out of every eight experiences chronic low back pain (Global Burden of Disease Study 2013 Collaborators, 2015; French, Downie, & Walker, 2018; Hartvigsen et al., 2018; Foster et al., 2018; Buchbinder et al., 2018; Beliveau et al., 2017).

Established in 1976, the Canadian Chiropractic Research Foundation (CCRF) has funded "research to discover the best, evidence-informed treatments for patients living with pain and disability caused by spinal dysfunction and disease" (CCRF, n.d.). Along with matching funding from the national and provincial associations, the CCRF has sought to place chiropractic researchers in Canadian universities, often as departmental chairs. Another Canadian research group, the Canadian Chiropractic Guideline Initiative, has been instrumental in developing clinical practice guidelines and best practice recommendations for field doctors.

Since the establishment of these organizations, there has been an exponential growth in the chiropractic research community and in the scientific evidence supporting the clinical effectiveness and relative safety of chiropractic care for spinal pain. During that time, more and more individual chiropractors began pursuing doctoral degrees in epidemiology, biomechanics, research methodologies and other related fields, and the chiropractic profession has invested heavily in clinical trials and other scientific pursuits. There are now many robust studies supporting the clinical effectiveness of manual therapy (i.e., mobilizations, manipulations) for low back and neck pain, certain types of headaches, and various conditions affecting the peripheral joints (Bronfort, Haas, Evans, Leininger, & Triano, 2010; Coulter et al., 2018; Côté et al., 2019).

As a non-pharmaceutical approach to spinal pain, chiropractic has also taken a leading role in the opioid crisis, both nationally and provincially. The Ontario Chiropractic Association (OCA) has even developed a toolkit to help chiropractors enable their patients to reduce opioid use (OCA, n.d.).

SAFETY AND ADVERSE EVENTS

In the late 1990s, studies from Scandinavia reported that around half of patients experienced an adverse reaction to their first chiropractic treatment. These adverse events were typically mild and localized, and most cases self-resolved (Senstad, Leboeuf-Yde, & Borchgrevink, 1997; LeBoeuf-Yde, Hennius, Rudberg, Leufvenmark, & Thunman, 1997).

With respect to serious adverse events, a recent systematic review calculated that the frequency of serious events varies from 5 per 100,000 manipulations to 1.46 per 10 million manipulations. Deaths occurred 2.68 times per 10 million manipulations (Gouveia, Castanho, & Ferreira, 2009).

Serious adverse events that have been linked with chiropractic treatment include stroke and coronary arterial dissection (CAD). Based on the data relating to all negligence claims in Canada alleging stroke after

cervical manipulation up to 2001 (Haldeman, Carey, Townsend, & Papadopoulos, 2001), it was calculated that the odds of a chiropractor encountering such a case were:

- 1 per 8 million office visits
- 1 per 5.8 million cervical manipulations
- 1 per 1,430 chiropractic practice visits
- 1 per 48 chiropractic careers

A recent population-based, case-crossover study reviewed hospital records of CAD and stroke in Ontario over a nine-year period. The authors of that study concluded that CAD stroke is rare and that no excess risk of CAD was seen after chiropractic care. Specifically, there was no difference when comparing visits by pre-stroke patients to either primary care physicians or chiropractors (Cassidy et al., 2008).

More recently, a number of studies have found no evidence of links between chiropractic care and CAD or vertebrobasilar stroke (Church et al., 2016; Chung, Côté, Stern, & L'Espérance, 2015; Kosloff, Elton, Tao, & Bannister, 2015). No evidence of strains to the internal carotid artery or changes in blood flow in the vertebral arteries after cervical manipulation has been found either (Herzog, Tang, & Leonard, 2015; Piper, Howarth, Triano, & Herzog, 2014; Quesnele, Triano, Noseworthy, & Wells, 2014)

REGULATION OF THE PROFESSION

In all Canadian provinces, chiropractors are permitted to perform joint manipulation, often described as moving a joint beyond its normal physiological range of motion but within the limits of anatomic integrity using a fast, low-amplitude thrust. Chiropractors are also permitted to go beyond the anal verge for the purpose of manipulating the coccyx (tail bone). Other important controlled acts include the right to diagnose and to take and interpret radiographs.

More recently, chiropractors in several provinces — with the notable exception of Ontario — have been granted the ability to order advanced imaging such as MRI or CT scans, as well as blood and urine lab diagnostic tests (although chiropractors themselves are not allowed to draw blood from patients). In most Canadian provinces, chiropractors are permitted to perform acupuncture, provided they take appropriate courses to do so, following the educational requirements established by the World Health Organization.

TABLE 1: Chiropractic associations and regulatory authorities

Region	Association	Regulatory authority
British Columbia	British Columbia Chiropractic Association	College of Chiropractors of British Columbia
Alberta	Alberta College and Association of Chiropractors	
Saskatchewan	Chiropractors' Association of Saskatchewan	
Manitoba	Manitoba Chiropractors Association	
Ontario	Ontario Chiropractic Association	College of Chiropractors of Ontario
Quebec	Association des chiropracticiens du Québec	Ordre des chiropracticiens du Québec
New Brunswick	New Brunswick Chiropractors' Association	
Nova Scotia	Board of the Nova Scotia College of Chiropractors	Nova Scotia College of Chiropractors
Prince Edward Island	Prince Edward Island Chiropractic Association	
Newfoundland & Labrador	Newfoundland & Labrador Chiropractic Association	
Yukon	Professional Licensing and Regulatory Affairs, Yukon Government	

Chiropractors in Ontario, Alberta and British Columbia are permitted to perform chiropractic on animals under the direct supervision of a veterinarian, provided they have obtained proper certification. In all provinces, chiropractors are permitted to prescribe, cast and dispense supportive devices such as orthotics, back supports, cervical pillows and joint braces.

Originally governed under the *Drugless Practitioner's Act*, Ontario chiropractors are now governed under the Regulated Health Professions Act (RHPA) of 1991, an omnibus legislation overseen by the Ministry of Health and Long-Term Care. Under the RHPA, chiropractors, along with medical doctors and dentists, are allowed to call themselves "doctor", a protected title. This legislative structure governing chiropractic exists in most Canadian provinces.

ADVOCACY

Roughly 80% of Ontario chiropractors belong to the Canadian Chiropractic Association (CCA) and provincial advocacy associations. A much small number of chiropractors belong to the national (Canadian National Alliance for Chiropractic) or provincial associations that promote subluxation-based care.

CURRENT ISSUES IN CHIROPRACTIC REGULATION

Advertisements

Recently, a significant amount of media scrutiny focused on the advertisements found on some chiropractor's websites and social media platforms. A few chiropractors have made unsubstantiated claims of cures for conditions such as autism, cancer, attention deficit hyperactive disorder (ADHD), Alzheimer's, diabetes and Tourette's (Marcoux, Pedersen, & Nicholson, 2017). Some of these postings discouraged patients from undergoing CAT scans, colonoscopies, mammograms and vaccinations, and some warned of the dangers of fluorinated water and mercury amalgams (Marcoux et al., 2017; CBC, 2018). During the coronavirus pandemic of 2020, a few chiropractors made unsubstantiated claims that spinal adjustments could stave off COVID-19 — a claim vigorously disputed by the scientific community (Bellemare, Ho, & Nicholson, 2020; Kawchuk, Hartvigsen, Harsted, Glissman Nim, & Nyirö, 2020).

In response to these unsubstantiated claims, Canadian chiropractic regulators have started to crack down on advertising deemed to be misleading, untrue, unethical and not in the public interest. Chiropractors who make such claims are often referred to discipline, which may result in loss of licensure.

Vaccination and immunization

Of all the controversies around chiropractic, it is the anti-vaccination stance held by some of its members that is the most damaging to the public perception of the profession.

Although not risk-free, vaccinations and immunizations are among the most important public healthcare initiatives implemented over the past 100 years, second only perhaps to improvements in sanitation. All Canadian chiropractic advocacy associations embrace the scientifically established clinical value of vaccinations and immunizations (CCA, 2019).

Provincial regulators have made it an act of professional misconduct for a chiropractor to discuss vaccination or dissuade a patient from vaccinating themselves or their children (College of Chiropractors of Ontario Council, 2019). Some chiropractors continue to post anti-vaccination statements on their social media platforms — and have been disciplined for doing so.

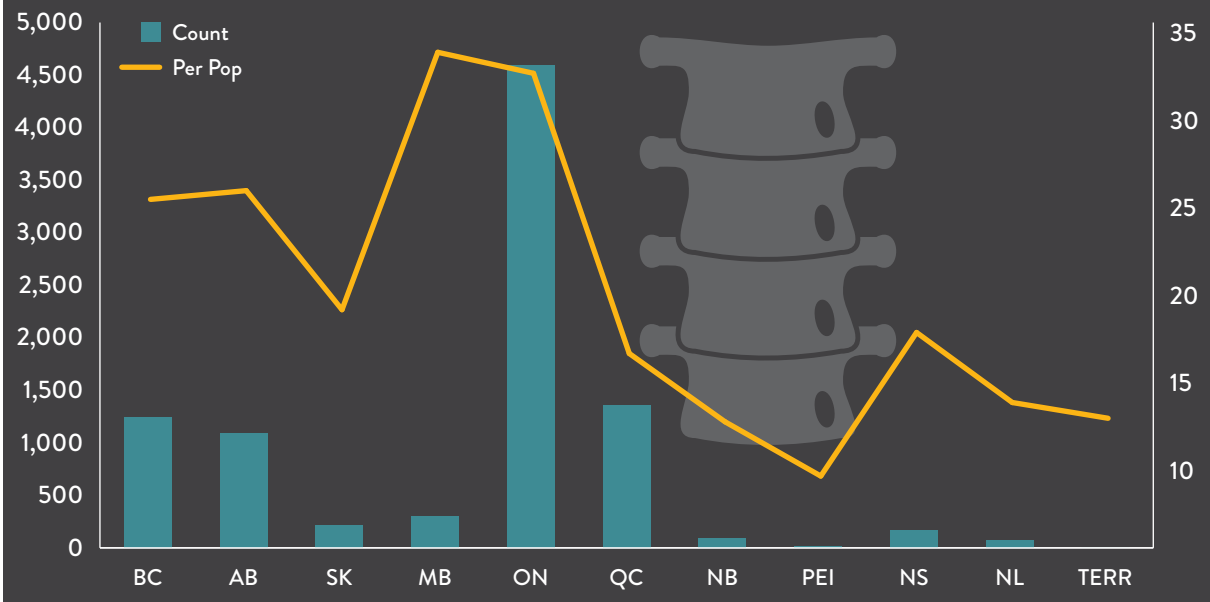
The roots of this opposition to vaccination can be traced directly back to both D.D. and B.J. Palmer, who believed vaccines to be "filthy animal poison" that would "pollute the blood" of those receiving it (Gleberzon, Lameris, Schmidt, & Ogrady, 2013).

A recent study reported that a vast majority of CMCC students (between 85 and 90%, depending on the survey question) were in favour of vaccination (Lameris, Schmidt, Gleberzon, & Ogrady, 2013).

Chiropractic care for children

Chiropractic care for children garners a great deal of controversy; however, recent studies have reported favourable evidence for conditions such as low back pain, prematurity and pulled elbow (Safer Care Victoria, 2019; Hutchins, 2017; Parnell Prevost et al., 2019). The evidence was inconclusive-favourable for conditions such as colic, asthma and otitis media.

Figure 1: Chiropractor count and per population rates in Canadian provinces and territories



Source: Canadian Institution for Health Information (data tables from 2014–2018)

Business practices

Some business practices used by chiropractors, such as requiring patients to commit to lengthy (e.g., yearly) prepayment treatment plans, generate considerable criticism both within and outside of the profession.

DEMOGRAPHICS

Of the approximately 9,000 chiropractors in Canada, more than half are licensed in Ontario. Of those, more than 3,200 practise in the province. The Maritime provinces have the fewest number of chiropractors, with only 14 practising on Prince Edward Island. Per population, Ontario has the highest rate of chiropractors and Prince Edward Island the lowest. The Canada-wide rate is roughly 200 chiropractors per 100,000 population.

Currently, 61% of Canadian chiropractors are men and 39% are women. As graduating classes at CMCC have been 55% female over the past 10 years, this number is expected to change. The first (and thus far only) female president of a chiropractic program was Dr. Jean Moss. A 1969 CMCC graduate, she was president of CMCC from 1991 to 2014. As of July 2020, women held leadership positions in multiple organizations throughout the chiropractic profession in Canada. Of note, none of these women were themselves chiropractors.

UTILIZATION RATES AND DEMOGRAPHICS OF CHIROPRACTIC PATIENTS

Most studies report that utilization rates of chiropractic services in Canada hover around 12%, although more current studies report that more than 20% of Ontarians have seen a chiropractor in the past year. The typical chiropractic patient is an older white woman of higher education and income (Beliveau et al., 2017).

CHIROPRACTIC AS A CAREER

Compared to many other healthcare professions, chiropractors have an enviable work-life balance. Because the average chiropractor rarely has to directly manage patients with devastating or terminal illnesses (unlike practitioners in high-stress fields such as oncology or emergency medicine), they do not suffer from professional burnout. The average chiropractor works 37 hours per week and takes four weeks of vacation per year (Mior & Laporter, 2008).

Although not as stressful, chiropractic is generally not as lucrative as are other doctor-titled disciplines (e.g., medicine, dentistry). In Ontario, a 2008 study reported a decline in average annual net income from $97,000 in 1992–93 to $48,900 in 2002–03, particularly in urban areas. In that same study, based on an estimated utilization rate of 10%, the optimal ratio of chiropractors to patients should be 1 to 7,099. The actual ratio in Ontario was 1 chiropractor for every 4,372 patients, indicating a significant over-supply of chiropractors in that province (Mior & Laporte, 2008).

The number of hours worked, wages and benefits vary greatly depending on region, experience and employer. For example, most Canadian chiropractors currently earn between $23,899 and $122,316 per year (Government of Canada, 2020). This relatively low annual income is due to a combination of low utilization rates, an increase in the number of registrants in each province (itself due to both an increase in the number of chiropractic students graduating from Canadian chiropractic programs and the repatriation of chiropractors who graduated outside Canada) and a low attrition rate, with most chiropractors continuing to practise well beyond age 65.

Upon graduation, many chiropractors enter private practice either as sole practitioners (owner) or as associates. This is supported by data from the Government of Canada Job Bank, which reports that the majority (approximately 71%) of chiropractors are self-employed (2020). Some new graduates become locum doctors, providing coverage for other chiropractors if they are away from practice for a period of time. Some chiropractors are involved in multidisciplinary practices, working alongside medical doctors, physiotherapists, naturopaths and massage therapists. A few chiropractors are also involved in education at chiropractic colleges or other colleges and universities throughout the country. An even smaller number of chiropractors are involved in research or are engaged in other professional activities such as advocacy or regulation.

CONCLUSION

Chiropractors excel as leaders in spinal pain treatment and other areas for which the science supports the effectiveness of manual therapies, including spinal manipulative therapy. While not risk-free, the incidence of serious adverse effects is very low, especially when compared to pharmaceutical and surgical interventions, and patient satisfaction rates are consistently high.

Yet chiropractors are often targeted by critics and sceptics. As a result, chiropractic is often judged more by the actions of those at its periphery than those at its core. This is unfortunate because the vast majority of chiropractors provide evidence-based and patient-centred care in a rational, ethical manner. Despite inter- and intra-professional challenges, chiropractors have emerged as vital players in Canada's healthcare system.

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ACRONYMS

CAD	Coronary arterial dissection
CCA	Canadian Chiropractic Association
CCRF	Canadian Chiropractic Research Foundation
CMCC	Canadian Memorial Chiropractic College
MSK	Musculoskeletal
NMSK	Neuro-musculoskeletal
OCA	Ontario Chiropractic Association
PSC	Palmer School of Chiropractic
SMT	Spinal manipulative therapy

ADDITIONAL RESOURCES

- Alliance for Chiropractic
  https://allianceforchiropractic.com
- Canadian Chiropractic Association
  https://www.chiropractic.ca
- Canadian Chiropractic Protective Association
  https://ccpaonline.microsoftcrmportals.com/en-US
- Canadian Memorial Chiropractic College
  https://www.cmcc.ca
- Canadian National Alliance for Chiropractic
  https://mycnac.ca/en
- College of Chiropractors of Ontario
  https://www.cco.on.ca
- Ontario Chiropractic Association
  https://chiropractic.on.ca
- World Federation of Chiropractic
  https://www.wfc.org/website

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