

Chiropractic: An Evidence-based Approach

David W. Ramey, DVM
PO Box 9114
Calabasas, CA 91372

Manipulation of the spine and other joints can be traced to early practitioners of various civilizations. Seventeenth and eighteenth century, English “bonesetters” based their practices on the belief that “little bones” could move out of place (and could be put back in place with an audible “click”).¹ Osteopathy, founded in 1874, and was initially based partly on the theory that misplaced spinal bones obstructed the flow and balance of bodily fluids.

The original theories and practices of chiropractic (from Greek *cheir* - hands and *praxis* - act or notion) can be directly traced back to the Canadian-born Daniel David Palmer. Palmer initially acknowledged the historical foundations of his several theories of chiropractic, however, he went on to credit the experience he gained during nine years of practice as a magnetic healer in the 1880s and '90s for their ultimate formation.² Palmer reportedly cured two people - one who was deaf and the other suffering from “heart trouble” - by replacing a “displaced” vertebra that was purported to be pressing against nerves. Palmer asserted that all disease depended on what nerves were “too tense or too slack” and whether there was “an excess or deficiency of functioning [sic].”³

Palmer concluded that “the dualistic system - spirit and body - united by intellectual life - the soul - is the basis of this science of biology, and nerve tension is the basis of functional activity in health and disease.” Palmer, “created the art of adjusting vertebrae, using the spinous and transverse processes as levers, and named the mental act of accumulating knowledge, the cumulative function, corresponding to the physical vegetative function - growth of intellectual and physical - together, with the science, art and philosophy - Chiropractic.” By 1903, Palmer had given up his initial theories, which held that displacement of any anatomic part could lead to inflammation and disease, replacing those with the idea that bones out of place caused disease, resulting in a pinching of nerves. This resulted in the term that still defines the chiropractic profession, the “subluxation.”

The subluxation has formed the basis for chiropractic authority while at the same time it has been the source of its greatest controversy. Chiropractors have been legally defined in the United States as those who diagnose and treat subluxations, however, such an anatomical lesion has never been demonstrated, at least in any sense used by the chiropractic profession. Indeed, “Evaluation of the chiropractic lesion(s) remains perhaps the greatest frustration and challenge facing researchers and S/Ps [scientist/practitioners] alike. Quantitative and qualitative definition of the phases of SC [vertebral subluxation complex], SDF [segmental dysfunction], and RDF [regional dysfunction] are needed, and no operational definition of even a most Generic “manipulable lesion” is available at this time.”⁴ Neither the chiropractic subluxation, nor any other defined entity, nor a physiologic mechanism of action by which spinal “adjustments” might work, has ever been accurately, or even consistently, defined. Chiropractic practice and philosophy shows vast differences among practitioners. Some in the field still ascribe to traditional Palmerian theories while others have advocated a scientific approach to evaluation of the therapies and have abandoned the subluxation.⁵

“Veterinary chiropractic”

Apparently no formal attempts were made in the early years of chiropractic to introduce its theories into veterinary medicine, although a blank diploma for an “Equine Adjustor” can be found in the Palmer Archives in Iowa. However, early chiropractors used chiropractic on animals. In 1921, two horses with azoturia (“in effect it acts like a paralysis”) were reportedly cured with chiropractic maneuvers.⁶ In 1923, a chiropractic school publication published a letter called, “Pigs have backbones with Subluxations that Adjustments work On,” describing the treatment of two partially-paralyzed pigs.⁷ D.D. Palmer’s son, B.J. Palmer apparently maintained a “veterinarian” [sic] hospital where vertebral subluxations of cows, horses, cats, dogs and other animals were “adjusted.” Palmer asserted that the application of chiropractic principles was the same, whether applied to humans or animals. Paradoxically, many chiropractors felt that downplaying animal applications of chiropractic was prudent, lest the public begin to call them “horse doctors.”⁸ In 1957, an article noted that “adjustments” had been made on cattle, dogs and a pig “suffering from such diverse conditions as foot rot, shipping fever, lumpy jaw, acute indigestion, etc., with improvement or complete recovery in all but two patients.” Chiropractic approaches to veterinary problems were featured in a chiropractic journal in the 1980s,⁹ with one two-part article even stating that existence of “veterinary” chiropractic “proved the chiropractic premise!”¹⁰

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Skeptical responses to applications of chiropractic philosophy to veterinary medicine appear sporadically throughout history. For example, an advertisement of a chiropractic school appealing to “veterinarians who are desirous of retiring from veterinary practice,” appeared in a 1923 veterinary journal, prompting this acerbic comment; “It is to be doubted whether a successful veterinarian who had the means and mood to retire would care to top off his career by bursting forth as a chiropractor... The intention may be to address primarily the veterinarian who simply wants to quit and seek another way of making a living... If he had been an able and conscientious practitioner of veterinary medicine, he would be too strongly imbued with the more thorough principles of his science ever to feel at ease as an apostle of drugless healing”.¹¹

More formal attempts to organize chiropractic practice in animals have been most recently conducted primarily under the auspices of the American Veterinary Chiropractic Association since the early 1980s. Current publications by veterinarians attribute both pathology and treatment efforts at subluxations^{12,13} or, alternatively, to the vertebral subluxation complex (VSC),¹⁴ although such terminology is as vague and ill defined in the veterinary field as it is in the human field. The AVCA has also lobbied for recognition as a profession separate from veterinary medicine or human chiropractic.

Chiropractic - Human

The current state of scientific knowledge concerning the elusive subluxation, or VSC, can be summed up as, “There is now sufficient scientific investigation to develop working models to explain the effects of the adjustment. However, there is insufficient evidence to state that any particular theory can be considered valid.”¹⁵ There is inadequate basic science data to substantiate the VSC, and there are few (if any) randomized, controlled, clinical trials of spinal manipulation that have monitored presumed indicators of the putative VSC. Therefore, it is not appropriate to claim that by manipulating the VSC, a therapeutic benefit in humans or animals can be achieved.¹⁶ Furthermore, even if such lesions could be shown to exist, in the human spine, the commonly used diagnostic measures to detect them are not reproducible or reliable.^{17,18}

No particular form of manipulative therapy been shown to be superior to another. That is, there is no evidence that chiropractic manipulations are of more benefit than maneuvers that may be performed by other practitioners, including osteopaths, or physical therapists. Indeed, dozens of “chiropractic” maneuvers and techniques exist and there has been much discussion and dissension about their relative merits.^{19,20} In addition, chiropractors tend to add various other physical modalities, such as heat and cold, to their manipulations, although these interventions have been shown to be of no benefit beyond manipulations alone.²¹

Although there are randomized, controlled trials (RCTs) supporting an analgesic and mobility-restoring benefit of manipulation for human patients with low back pain and related musculoskeletal conditions,^{22,23} these trials were not specifically related to chiropractic. Systematic reviews and 1990’s era meta-analyses have made cautiously positive or equivocal statements about the effectiveness of spinal manipulation for its various applications,^{24,25,26,27,28} but, again, spinal manipulation does not equal chiropractic. Furthermore, overall, the quality of the studies and the reviews was not good.²⁹ Even when clinical efficacy has been shown statistically, it is generally of marginal value clinically, and benefits typically depend on specific points in time at which the observations were made.³⁰

However, more recent reviews, of sham-controlled, double-blind, randomized clinical trials on spinal manipulation have suggested that spinal manipulation was not associated with clinically relevant therapeutic effects,³¹ or that there is no evidence that spinal manipulative therapy is superior to other standard treatments for patients with acute or chronic low-back pain.³² In most of the RCTs of manipulation for musculoskeletal pain, the positive effects noted tend to be statistically significant, but not dramatic or even clinically relevant. Other studies have shown that manipulative interventions may not be better than minimal intervention provided by an educational booklet on how to take care of a sore back.³³ In terms of long-term outcomes, chiropractic has not been shown to have benefit when compared to other treatments for studied conditions. Reviews of chiropractic treatment of conditions not related to the musculoskeletal system have not shown benefit.^{34,35} Thus, to summarize, the research to date has shown that spinal manipulation may be effective only in a narrow subset of human patients, and in these patients, it is no more effective than other treatments.³⁶

The mechanism(s) of such therapeutic effects as exist have not been established. Many of the traditional, segmental indicators of the VSC have failed to demonstrate reproducibility (inter-examiner reliability) among clinicians.^{37,38} None of the presumed indicators of VSC has been shown to predict illness (i.e., symptoms, altered physiological function), nor has their eradication (by manipulation) been shown to confer clinical benefit. In short, the clinical evidence for the meaningfulness/utility of the VSC is barely more than anecdote and a century of anecdotes has yet to give rise to experimental proof of the traditional chiropractic lesion.

Finally, there is no consensus within the chiropractic profession on what chiropractic is or should be. Initially, chiropractic was a panacea for all diseases based on the correction of impinged spinal nerves that could be corrected by spinal “adjustment,” however, many chiropractors have moved away from this definition. There is also much division within the chiropractic profession about the scope of practice. Finally, even as the scientific deficiencies of chiropractic are pointed out, the chiropractic profession appears to be entrenched in non-scientific and anti-scientific messages; the largest professional associations in the United States and Canada routinely distribute patient brochures that make claims for chiropractic that cannot be currently justified by available scientific evidence or that are intrinsically untestable.³⁹

Mechanism of Action

Chiropractors may assert that they direct spinal manipulations at specific dysfunctional joints, characterized as a form of joint sprain or strain, with associated descriptive terms such as hypomobility, malalignment or muscle tension, among others.⁴⁰ Chiropractic theory has held that attention to these problems can have important physiologic effects, such as increased range of joint motion,^{41,42} changes in kinematics of vertebral facet joints,⁴³ increased tolerance for pain,⁴⁴ and changes in endorphin levels⁴⁵ among others. However, subluxation of a vertebra, as originally defined by chiropractic, and involving the exertion of pressure on spinal nerves, does not occur, regardless of which theory is subscribed to.⁴⁶ In addition, work suggests that the concept of specific, directed manipulations is also untenable. Thus, it appears that, to the extent that spinal manipulative treatments have been successful, it is not because of the precisely directed and amplitude-controlled force (which seems impossible) but despite the fact that these forces cannot be applied precisely.⁴⁷

Safety

The safety of spinal manipulation has been the subject of considerable controversy in the human field. The risk of serious complications from lumbar manipulations appears to be quite low.⁴⁸ However, cervical manipulations have been associated with the risk of serious, even fatal, cerebrovascular accidents, although the frequency of such complications is the subject of discussion.⁴⁹

“Veterinary chiropractic”

The forces on the spine of an animal that walks on four limbs are likely to be quite different from those of humans. Thus, even if human chiropractic theories were plausible, direct application of those theories to animals might not be warranted. There are additional mechanical considerations, for example, since the vertebrae of horses are the size of the adult fist and surrounded by muscle, tendon, and ligament layers several inches thick, it seems reasonable to wonder whether equine vertebrae can actually be manipulated.

It may be reasonable to surmise that moving an animal's limbs around, massaging its muscles, or giving it any sort of attention might be well-received by the animal, but there is no evidence that such attention can improve health. Apparently, no controlled experimental research of the clinical effects of “adjusting” animals has been published to date. There are no systematic, prospective, controlled outcome data to substantiate a beneficial effect of musculoskeletal manipulation of animals. Furthermore, no published study has ever shown how a chiropractic-related problem can be diagnosed in animals or even how treatment success is determined.

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I also am a chiropractor and I have to disagree with the other chiropractor's opinion. I have personally witnessed and hear about chiropractic miracles every day. These are related to conditions other than pain syndromes and musculoskeletal problems. Patients who experience a multitude of visceral problems and symptoms somehow see a reduction in/elimination of these problems and symptoms. Evidence-based practice (EBP) is an approach that aims to improve the process through which high-quality scientific research evidence can be obtained and translated into the best practical decisions to improve health. The interprofessional model of EBP emphasizes shared decision-making within the context of the most important advances of the various health professions. [Show full abstract] evidencebased approach to making design decisions. The advent of Evidence-Based Design represents a shift from basing design decisions solely on tradition or opinion to an approach that emphasizes the importance of using credible research to inform design decisions. This page contains the abstract: Is Chiropractic Evidence Based? A Pilot Study http://www.chiro.org/ChiroZine/ABSTRACTS/Is_Chiropractic_Evidence_Based.shtml. CONCLUSION: When patients were used as the denominator, the majority of cases in a chiropractic practice were cared for with interventions based on evidence from good-quality, randomized clinical trials. When compared to the many other studies of similar design that have evaluated the extent to which different medical specialties are evidence based, chiropractic practice was found to have the highest proportion of care (68.3%) supported by good-quality experimental evidence. From the Full-Text Article An evidence-based chiropractor will use this type of spinal manipulation as their primary form of treatment as it is the only form of chiropractic that has solid evidence behind it. It is likely that not even half of those 100+ techniques involved HVLA spinal manipulation. If a chiropractor doesn't use this technique they are basically shooting in the dark. An evidence-based practice means the doctor of chiropractic fully understands the patient's needs, values, and preferences then applies the right clinical treatments indicated by the newest evidence-based research. Put another way, Evidence-based Practice (EBP) puts patient care first. The treatments selected depend on several factors: The strength of the scientific evidence. An examination of the benefits and risks of all treatment approaches. The patient's preferences. Advantages of an Evidence-based Chiropractic Practice (EBP). One way to think about a practice that follows an EBP philosoph