

THE ASSESSMENT AND CORRECTION OF VERTEBRAL SUBLUXATION IS CENTRAL TO CHIROPRACTIC PRACTICE: IS THERE A GAP IN THE CLINICAL EVIDENCE?

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ABSTRACT

Objective: To describe the evidence supporting the central concept of the assessment and correction of vertebral subluxation as a core clinical objective of chiropractic practice and to identify a gap in the clinical evidence base that may inhibit greater unity around this central concept.

Discussion: Assessment and correction of vertebral subluxation is a central theme in clinical chiropractic practice, embraced by the majority of the practicing profession and chiropractic students. Chiropractic patients report healthcare benefits beyond a period of therapeutic care and their presenting complaints. A potential gap has been identified in the body of clinical evidence supporting chiropractic care for the assessment and correction of vertebral subluxation. Documenting the assessment of commonly used and reliable direct indicators of vertebral subluxation pre and post chiropractic care or a clinical trial may serve to fill this knowledge gap.

Conclusion: The assessment and correction of vertebral subluxation is a core clinical objective in the practice of chiropractic. Chiropractors in clinical practice, chiropractic educators, and chiropractic researchers are encouraged to address the identified gap in the evidence by documenting the common used direct indicators of vertebral subluxation used both in the initiation of care or a clinical trial and at each progress evaluation or post the completion of clinical trial outcome measurements. (*J Contemporary Chiropr* 2019;2:4-17)

Key Indexing Terms: Vertebral Subluxation Complex; Chiropractic; Clinical Practice; Evidence-Based Practice

INTRODUCTION

Vertebral subluxation (also referred to as 'chiropractic subluxation', 'spinal subluxation', 'subluxation' and 'vertebral subluxation complex') has been central to the chiropractic profession since its inception, and is the basis for the profession's identity. (1-4) The core clinical objective of the chiropractic profession is seen by many to primarily identify, analyze and correct areas of vertebral subluxation, whereby improvement in spinal function in order to either improve nervous system function and general health and/or prevent or manage neuromusculoskeletal conditions is achieved. (5-7) Despite significant controversy and debate, vertebral subluxation remains relevant to the practice of chiropractic and education, and is documented in policy and legislation. (1-4,6,8-14)

The concept of vertebral subluxation is considered legitimate and potentially testable. (11) Over the course of the chiropractic professions history there have been a number of definitions of vertebral subluxation that have risen to prominence for either historical, political or educational reasons. (6,15-20) Debate has ensued as to whether research that is congruent with the philosophical concept of vertebral subluxation is of importance to the chiropractic profession, and if the offered definitions are able to be tested. (11,21,22) A review of models of vertebral subluxation does highlight commonality between definitions (all having biomechanical and neurological components) and the potential to test these models through basic and clinical science. (23) In recent years, 2 research foundations have developed agendas specifically focused on investigating the vertebral subluxation, indicating the need for further understanding of the concept. (26,27) To further support investigation along these lines, 2 organizations within the chiropractic profession have recently developed a conceptual definition (28) and defined a testable model of subluxation (20), which reflect on and refine previously published models and definitions. (6,15-20,23-25)

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Rome, an Australian chiropractor and researcher, states *"The chiropractic profession started with a hypothesis based on an observation, it has rigorously tested and clinically proved that hypothesis. Science has not disproven it."* (3) The purpose of this paper is to describe the evidence supporting the centrality of vertebral subluxation in chiropractic clinical practice and to identify a potential gap in the clinical evidence base that may inhibit greater unity around this central concept.

DISCUSSION

Vertebral subluxation has been described as being a central and defining concept for the chiropractic profession. (1,3,29,30) Consensus has previously been reached by diverse groups embracing vertebral subluxation as a foundational and unique element of chiropractic care. (5,6,31) Despite this, the term has come to be the center of much debate and has drawn criticism as to its legitimacy as an entity of clinical importance (11,29,32), has been at the center of claims of professional lexicon cleansing (33), has been ridiculed as an outdated concept by a minority of chiropractic education institutions (34), and has been attacked by splinter groups within and outside of the chiropractic profession. (35,36)

At the heart of the current discussion is the practice of chiropractic by those at the coal face, those in clinical practice and the majority of the profession, the students studying to become chiropractors, and the people that are served through chiropractic care on a daily basis. Good, (37) a USA based chiropractic educator and researcher, states *"Ultimately, the centrists [those chiropractors that occupy the middle ground of the professions spectrum] must become proactive if they want to protect the profession and further advance the evidence in regard to the subluxation. They must not only engage in the debate, but fund the research that will investigate various aspects of the subluxation and then help disseminate this evidence to fellow doctors of chiropractic, other practitioners, health care policy makers, and society at large."* Concluding that *"The role of subluxation in chiropractic practice, the progression of this debate, and the future of the profession will be directly determined by the role that centrists choose to play."* (37)

Organizations Independent of the Chiropractic Profession

Globally there are organizations, independent of the chiropractic profession that suggest a clear indication that vertebral subluxation is considered to be a central feature in the clinical practice of chiropractic. The World Health Organization (WHO), an internationally recognized leader in healthcare policy, define chiropractic as *"A health care profession concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system and the effects of these disorders on general health. There is an emphasis on manual techniques, including joint adjustment and/or manipulation, with a particular focus on subluxations."*

(5) The WHO have recognized "subluxation" as a central "focus" in the practice of chiropractic.

Medicare, a federally funded US healthcare insurance program for US citizens over 65 years of age, state that *"coverage of chiropractic services is specifically limited to treatment by means of manual manipulation (i.e., by use of the hands) of the spine to correct a subluxation."* (38,39) Further, subluxation is defined as *"a motion segment, in which alignment, movement integrity, and/or physiological function of the spine, are altered, although contact between joint surfaces remains intact,"* which can be identified through a number of commonly use clinical assessments including motion and soft tissue palpation, tenderness and x-ray. (38,39)

The Institute for Alternative Futures (IAF), (9) an independent organization and leader in helping organizations monitor trends, exploring future possibilities and creating the futures they prefer, reviewed the chiropractic profession in 2013. The experts identified for the review included policy makers, researchers, educators, thought leaders and clinical practitioners from within and outside the chiropractic profession. The IAF assessment of the chiropractic profession revealed that core to the clinical practice of 86% of U.S. chiropractors practice was vertebral subluxation correction, and that "subluxation" was the only "condition" that was "routinely seen" in practice. (9)

The Gallup Corporation, an independent global analytic and advice firm, have conducted several polls of the public's perception of chiropractic in the United States. (40-42) While they do not specifically discuss chiropractic their findings suggest that 50% of people don't know enough about the philosophies that guide chiropractic care. (42) However, those that do have an understanding of the about the philosophies that guide chiropractic care were 2 times more likely to appeal to the philosophies. (42) This accounts for 30% of the public polled. (42) Earlier findings suggest that 69% of the public agree that they have a good understanding of what chiropractors do, though only 31% stated "I want to see a chiropractor on a regular basis, even when I don't have pain." (40) 91% of the public polled stated that "spinal adjustment" was the service they want to receive when they visit a chiropractor. (41)

Chiropractors in Clinical Practice

Assessment of the opinions and practice characteristics of chiropractors' clinical practices have been the source of review in profession-wide surveys and in peer-reviewed research. Arguably the widest review of chiropractors' opinions comes from the World Federation of Chiropractic (WFC) Identity Survey, a multinational consultation in the identity of the chiropractic profession. (43) Though only achieving a 12.7% response rate, the WFC found that 65% of chiropractor's worldwide felt that the profession wanted to be viewed as having a focus on "vertebral subluxation and its impact on general health." (43)

A Canadian study found that 63.3% of chiropractors surveyed subscribed to a philosophically traditional perspective of chiropractic practice, subscribing to either the philosophical stance of DD or BJ Palmer. (44) In a North American study, McDonald et al. (10) found that 88.1% of North American chiropractors wanted to retain the term "vertebral subluxation." A similar majority (89.8%), however, felt that chiropractic care should be limited to musculoskeletal conditions. (10) Similar studies of chiropractors' perspectives have been undertaken in Australia and North America; however, the surveys do not include the term "vertebral subluxation" as a possible response option. (45,46) The Australian study (45) does report that chiropractors perceive that 73.1% of patient visits are for "spinal health maintenance," which begs the question, what are the patients being assessed for that requires chiropractic intervention to maintain spinal health?

Since 1991, the National Board of Chiropractic Examiners has routinely surveyed the profession in the USA, which results in their Practice Analysis of Chiropractic document. The rationale for the survey is "To ensure that the assessment of chiropractic students and doctors of chiropractic accurately represents what chiropractors do in practice." (47) Most recently, this survey found that "spinal subluxation" was managed solely in 88.9% of patient encounters with chiropractors. (47)

In 2004, the General Chiropractic Council commissioned a study of UK chiropractors to better understand their views. The results were compared for what the chiropractors felt chiropractic could offer and the reality of how chiropractors actually practiced. Both "Wellness care, promoting general health and helping to prevent the occurrence of disorders" and "Optimising a patient's health despite incurable conditions" was felt to be what chiropractic could offer by 77.16% of chiropractors, though was only practiced in reality by 62.64% and 64.4% of chiropractors respectively. (48)

Most recently, Beliveau et al. (49) performed an extensive scoping review of the chiropractic profession. Scoping reviews have become increasingly popular approach for synthesizing research evidence of broad topics that are complex or heterogeneous in nature. (50) The review found the most common manner in which chiropractors assessed their patients was by using static palpation (89.3%), motion palpation (86.5%) and "spinal examination" (79.5%). (49) Static and motion palpation are recognized as commonly used and reliable indicators in the assessment of vertebral subluxation. (39,51-56) In addition, the authors report "spinal manipulation" as the most commonly used method of patient management, used 79.8% of the time. The most commonly used chiropractic systems listed as being used in managing patients were Diversified, Activator, Gonstead, HIO, Thompson and SOT. These techniques are reported as being core to

chiropractic, (57) and all of these technique protocols have a clear objective to bring about the correction of vertebral subluxation. (58-61) Further recent studies have highlighted the common use of 'maintenance care' in the management of chiropractic patients, describing that "the main hypothesis is that treatment may improve biomechanical and neuromuscular function." (62) This is congruent with the many models of vertebral subluxation available. (16-20,23-25,28) The evidence suggests that the concept of vertebral subluxation is an accepted and central feature in the clinical practice of chiropractic.

Perspectives of Chiropractic Students

Little is known about students training in undergraduate chiropractic degrees regarding their perspective on chiropractic practice. In 2010, the World Congress of Chiropractic Students (WCCS), an international forum representing the global student chiropractic population, passed a motion to adopt the Association for Chiropractic College's definition of vertebral subluxation. (63,64) The definition states "A subluxation is a complex of functional and/or structural and/or pathological articular changes that compromise neural integrity and will influence organ system function and general health." (6,64) The WCCS also define the clinical role of a chiropractor as being "...adjustment of the segments of the spine, and extremities, in order to relieve nerve interference and, to promote optimal health." (64)

Recently, 2 studies have been published that report on the perspectives of students in North America, and Australia and New Zealand. (12,65) The majority of North American students (61.4%) responded that "the emphasis of chiropractic intervention is to eliminate vertebral subluxation." (65) A strongly positive response toward being educated in evidence-based information was also reported. (65)

Results reported from a similar survey of Australian and New Zealand chiropractic students echoed the results of the North American students. The majority (54.8%) of students from Australia and New Zealand indicated that "The primary purpose of the chiropractic examination is to detect vertebral subluxations," and 58.2% of responders also indicated that the "Emphasis of chiropractic care is to eliminate vertebral subluxations." (12) The lower percentage of students supporting the emphasis on vertebral subluxation focused chiropractic care, though still a majority, may be reflected in that half of the existing chiropractic colleges in Australia are signatories of the chiropractic education collaboration document which relegates vertebral subluxation to an historical concept only. (34) The students in this study also indicated that there should be an emphasis on evidence in their curriculum. (12) The authors noted that they were expecting dissimilar student opinions to those of North American chiropractic students given that chiropractic training is exclusively university based, which in Australia is typically more musculoskeletal in orientation. (12,34)

The evidence suggests, not only is the concept of vertebral subluxation is an accepted and central feature in the clinical practice of chiropractic, that the assessment and “elimination” of vertebral subluxation is congruent with how chiropractic students perceive the objective of chiropractic to be.

Public Perception

It is well established that members of the public seek out chiropractic due to neuromusculoskeletal complaints, primarily of the spine. (45,47,66-73) However, there is growing evidence that members of the public are seeking chiropractic care for “wellness” care. (45,70,71,74,75) Parents also seek chiropractic care for their children for “wellness.” (69,73)

Brown et al. (70) reported on characteristics of patients from 96 randomly selected Australian chiropractic practices. General health and well-being was the second most commonly given reason for seeking care. The patients also reported that family tradition was not a major factor in choosing chiropractic care, but rather a personal philosophy was the salient reason for their choice in 70.2% of cases.

Charity et al. (71) reported on 3287 unique patient visits to chiropractors in Victoria, Australia. The primary reason for the patient’s visit was “wellness/maintenance” care, which was in 39% of cases. Patients were typically oriented to maintaining healthy lifestyle habits.

Adams et al. (45) surveyed 2005 Australian chiropractors about the clinical management they provided. “Spinal health maintenance/prevention” was the reason for patient presentation in 73.1% of cases. The authors estimated that there were 21.3 million visits to Australian chiropractors annually, which would suggest that approximately 15.5 million visits are in relation to “spinal health maintenance/prevention.”

These findings are echoed elsewhere around the world. In 2 similar studies from Switzerland and South Africa, the researchers found that 73.7% and 89.7% of chiropractors respectively saw patients for “wellness/preventative care.” (76,77) Similarly, a survey of adults in the USA found that 77.5% of respondents reported that chiropractic had helped “a great deal with improving their overall health and well-being”. (78) This suggests that chiropractors around the world recognize the public choose chiropractic for reasons well beyond short-term management of pain syndromes.

Most recently, a study presented at the Association for Chiropractic Colleges Research Agenda Conference, Dallas 2018, found that the major reason (62.9%) for parents seeking chiropractic care for their children is because chiropractors aim to “treat the cause, not just

the symptoms.” (74) Of the people surveyed, 84% stated that their children’s health had improved as a result of chiropractic care. (74) This is consistent with the results from a New Zealand study, where 90% of patients reported that they had received benefit from chiropractic care in areas beyond their presenting complaints. (72)

Alcantara et al. (69) reported that ‘wellness care’ was the most common reason for parents in choosing to take their child to a chiropractor. Carlton et al. (73) reported that chiropractic care was 1 of 2 complementary and alternative medicine (CAM) practices chosen by parents to improve “well-being” for their children. It would be reasonable to consider that the parents of these children recognize a benefit of chiropractic care beyond the short-term management of a pain syndrome.

Without a documented pain syndrome as a reason for patients seeking chiropractic care (45,69-71,74-77), and given the frequency that chiropractors suggest that they are solely managing patients for vertebral subluxation (45-47), it can be assumed that members of the public (both novices to chiropractic and existing chiropractic patients) may choose chiropractic care for benefits received for chiropractic care focused on the correction of vertebral subluxation.

Patient Education

There is little evidence available in the literature pertaining to education of the public about vertebral subluxation. To my knowledge, there are only 2 studies that focus on public education regarding the concept of chiropractic care focused on vertebral subluxation.

A Canadian study, (79) presented at the WFC Congress (Paris 2001), aimed to measure the awareness of the term “subluxation” and its influence on chiropractic considerations. Respondents were asked “*Whether knowing about subluxation increased or decreased interest in considering chiropractic treatment.*” The authors suggest that “*knowing about subluxation does not meaningfully increase interest in chiropractic.*” However, the authors conclusions seem somewhat misleading. In fact, there was a positive shift in the opinions of 42% of those asked, only 1% becoming negative towards the profession. (79)

Russell et al. (80) surveyed 345 people at public marketing events in Auckland, New Zealand. The participants were educated about chiropractic care regarding vertebral subluxation. Results were similar to the Canadian study, with 44.3% of participants changing their perception of chiropractic for the positive, and only 1.7% of the respondents for the negative.

The evidence suggests that not only is the concept of vertebral subluxation a central feature in clinical practice, the assessment and “elimination” of vertebral subluxation

is congruent with what chiropractic students perceive the objective of chiropractic to be. The public/patients are also both open to the concept of vertebral subluxation as a legitimate healthcare concern and they are compelled to continue chiropractic care for reasons well beyond short-term therapeutic benefit. It stands to reason that chiropractic care focused on correction of vertebral subluxation supports the patient's rationale for remaining under chiropractic care, at the very least to maintain spinal health.

Outcomes of Chiropractic Care and Vertebral Subluxation Assessment

Outcomes of chiropractic care are well reported, whether they be for neuromusculoskeletal complaints (50,80), non-neuromusculoskeletal complaints (47,70,80-83), improved function (50,83-93) or quality of life. (92-97) These outcomes are all associated with the "chiropractic care" or "spinal manipulation" provided in the studies. However, these outcomes are a benefit associated with a period of chiropractic care, and not necessarily a direct indicator of the reduction, correction or "elimination" of vertebral subluxation, although they are very important to understand and report on.

Other indirect or remote indicators associated with the presence of vertebral subluxation have also been reported on. These include measured spinal range of motion, heart rate variability, surface electromyography and thermography. (51,98-110) While these assessments may reflect important objective measures associated with improved biomechanical, neuromuscular and neurological function following chiropractic care, they do not indicate exactly where to provide the chiropractic adjustment, or in what direction, and may not indicate that a specific vertebral subluxation has been reduced, corrected or "eliminated".

Of primary interest to the current study are direct indicators of vertebral subluxation. These have been reported to be commonly used in clinical practice, both as generic indicators or as part of specific technique protocols. (49-61) Direct indicators of vertebral subluxation include tenderness, soft tissue palpation, intersegmental motion palpation, joint play/end feel, leg-length inequality, and special tests including cervical syndrome, Derifield and heel tension. (51-53,58) Direct indicators of vertebral subluxation are the assessments used in daily clinical practice to directly determine the site and direction to apply the chiropractic adjustment. These direct indicators are consistent with the biomechanical and neurological attributes of a vertebral subluxation common to all models. (16-20,23-25,28) The ability to reliably assess for presence of vertebral subluxation and post-adjustment reduction, correction or "elimination" of those direct indicators of vertebral subluxation has been reported. (39,51-56,111) Although validity of these assessments is limited, these direct indicators have been reported as being moderate to high in reliability. (39,51-56,111) A recent report at the

Association of Chiropractic Colleges Research Agenda Conference workshop suggests that assessments should still be used despite limited evidence "provided the procedure is thought to have construct validity", meaning observations seen in clinical practice are consistent with the theoretical concept, in this case the assessment of vertebral subluxation. (112)

Since a core clinical objective of chiropractic care is to assess for and, with the chiropractic adjustment, reduce, correct or "eliminate" vertebral subluxation (5-7,12,65), it stands to reason that this should be reported in the clinical literature in addition to any indirect/remote objective measures and subjective outcome measures being used and reported on. This may represent a gap in the clinical evidence.

The Evidence Gap

It may be an impractical task to review every published peer-reviewed study relevant to the clinical practice of chiropractic, though potentially an important review of the available literature. For the purpose of this study, to assess the potential gap in clinical evidence, I reviewed all clinically-oriented studies in chiropractic peer-reviewed journals in 2017, the last full calendar year. A total of 84 papers, (113-196) meeting the criteria for inclusion, were found in a review of *Annals of Vertebral Subluxation Research, Chiropractic History, Chiropractic and Manual Therapies, Chiropractic Journal of Australia, Journal of the Canadian Chiropractic Association, Journal of Chiropractic Education, Journal of Chiropractic Humanities, Journal of Chiropractic Medicine, Journal of Clinical Chiropractic Pediatrics, Journal of Manipulative and Physical Therapeutics, Journal of Pediatric, Maternal and Family Health, and Journal of Upper Cervical Chiropractic Research*. Criteria for inclusion were that the paper was of a clinical orientation with chiropractors performing the assessment and intervention, peer-reviewed and published in a chiropractic journal in the 2017 calendar year.

Of the 84 papers 2 were clinical trials (160,161), 1 was a prospective study (163), 1 was a retrospective chart review (159), 11 were case series (133, 137, 142, 143, 146, 149, 150, 152, 154, 159, 186), and 69 were case reports. (113-133, 135, 136, 138-141, 144, 145, 147, 149, 151, 153, 155-157, 162, 164-185, 187-196) A total of 66 (78.6%) of the studies made specific reference to vertebral subluxation as the entity that was being assessed for in order to provide chiropractic care.

Direct indicators of vertebral subluxation were documented in 59 (70.2%) of the studies at the initiation of chiropractic care or clinical trial. (113, 115, 116, 119-122, 127, 130-133, 135, 136, 140, 141, 143, 145, 148-150, 152, 154-158, 160-162, 164-169, 171, 173-196) When thermal patterning is included for upper cervical techniques this number raises to 62 (73.8%). The most common direct indicators of vertebral subluxation reported in the initial assessment were motion

palpation (52.4%) (113, 115, 116, 122, 127, 131, 133, 135, 136, 140, 141, 143, 145, 148, 154-156, 158, 160-162, 164, 167, 169, 173-189, 191, 196), soft tissue palpation (45.2%), (116,120-122,127,130,132,133,135,136,141,145,148-150, 152, 155, 162, 164, 165, 167-169, 173-175, 178-186, 189, 191, 196) and leg-length inequality (21.4%). (119, 145, 148, 164, 167, 168, 173, 180, 181, 183-186, 189, 190, 193-196) X-ray was used in 41 (48.8%) of initial patient or subject assessments. Indirect or remote assessments of autonomic and neuromuscular function associated with vertebral subluxation was initially measured by heart rate variability (3.4%), surface electromyography (16.7%), and thermography (25%).

In stark contrast, very few studies reported on the direct indicators of vertebral subluxation following a course of chiropractic care or at the end of a clinical trial, with only 13 (15.4%) studies documenting a reduction, correction or "elimination" of vertebral subluxation based on the direct indicators that were assessed. (119, 121, 122, 130, 131, 152, 155, 173, 175, 176, 180, 187) When thermal patterning is included for upper cervical techniques, this number raises to 16 (19%). The most common direct indicators of vertebral subluxation reported in the post care or clinical trial assessment were soft tissue palpation (8.3%) (121, 122, 130, 152, 155, 175, 180), leg-length inequality (6%) (119,173,180,190,195), and motion palpation (3.6%). (131,180,187) Indirect or remote assessments of autonomic and neuromuscular function associated with vertebral subluxation after a course of chiropractic care or clinical trial was measured by heart rate variability (2.4%), surface electromyography (9.5%), and thermography (16.7%), indicating these objective outcomes are more consistently reassessed, although may be poorly used.

The gap in the evidence, from my observation, seems to be a lack of documentation of direct indicators of vertebral subluxation, predominantly after a course of chiropractic care or clinical trial, to demonstrate whether vertebral subluxation has remained the same, reduced or has been corrected or "eliminated." More commonly, "spinal manipulation," "chiropractic care" or a named chiropractic technique is described as the intervention, and only the outcomes not directly associated with vertebral subluxation are measured.

Case reports and series are typically considered low-level research on the hierarchy of evidence. However, case reports and series are a direct reflection of chiropractic care in a clinical setting, and thus a true reflection of clinical practice, and should document change in direct indicators of vertebral subluxation. Clinical trials are studies in which the participants are randomly divided into separate groups that receive different treatments or other interventions. (197) Given the typically small number of participants in a clinical trial, it is quite feasible to assess

for direct and reliable indicators of vertebral subluxation after the intervention once the clinical measures have been completed, in order to also determine if there has been a reduction or correction in vertebral subluxation.

Direct indicators of vertebral subluxation are common to the chiropractic profession and evidence shows there are increasing levels of reliability in their use. (39,51-56,111) Recently, chiropractic research-funding organisations have highlighted the need for more evidence in this area of the profession's interest. (23,24) This is reflected in the concluding comments of Hartvigsen and Fench, (198) who state *"There is a paucity of data and rigorous scientific studies regarding most aspects of chiropractic and chiropractic practice,"* and further echoed in a recently presented pilot study on the research topics of interest to practicing chiropractors, where Hosek et al (199) found that *"field doctors would like research studies designed to support what they anecdotally observe in their practices."*

Chiropractors in clinical practice, chiropractic clinical educators and chiropractic researchers are encouraged to include documentation of these common direct indicators of vertebral subluxation both at the initiation of chiropractic care or clinical trial and at each progress evaluation, irrespective of the specific named chiropractic technique they choose to manage their patients and the other indirect/remote objective and subjective outcomes, in order to minimise this potential gap in the evidence supporting chiropractic care for the assessment and reduction, correction or "elimination" of vertebral subluxation.

Limitations

A narrative review of the literature does have limitations; it is evaluated from my perspective and hence may include personal bias. The paper does not review each individual model or definition of vertebral subluxation, but rather identifies where commonly-used direct indicators of vertebral subluxation have been used or not. I do not report on the validity of individual direct indicators of vertebral subluxation, only that they are commonly used in clinical practice and clinical trials and that there is established reliability for their use. Future research into this area of inquiry would benefit from a more systematized approach.

CONCLUSION

The assessment and correction of vertebral subluxation is central to the clinical practice of chiropractic care. Chiropractic students are in favor of a vertebral subluxation focus in patient management. Members of the public are positively influenced by education on vertebral subluxation-focused chiropractic care, and regularly choose chiropractic care for reasons beyond a short-term therapeutic benefit.

Evidence demonstrates that vertebral subluxation can be reliably identified through commonly used direct indicators, and that outcomes of chiropractic care beyond neuromusculoskeletal pain management are positive, although often associated with a course of care under a named chiropractic technique or a generalized “chiropractic care” or “spinal manipulation”. However, there may be little evidence in the chiropractic literature demonstrating reduction or elimination in direct indicators of vertebral subluxation over or at the end of a course of chiropractic care or clinical trial.

A potentially important line of investigation would be to analyze the available models of vertebral subluxation and compare them to the commonly used indicators of vertebral subluxation. Chiropractors in clinical practice, chiropractic clinical educators and chiropractic researchers could address this potential gap in the evidence by documenting the commonly used direct indicators of vertebral subluxation in the initiation of care or a clinical trial and at each progress evaluation or post the completion of clinical trial outcome measurements. Further investigation into the reliability and validity of direct indicators of vertebral subluxation should also be undertaken as a priority for the chiropractic profession.

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