



Chiropractic Care for Subluxation: A descriptive review of the literature 2019 – 2022

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Abstract: A descriptive review of chiropractic literature published between 2019-2022 (inclusive) and pertaining to subluxation has been undertaken. The found papers allowed a full and in-depth literature review. This is a descriptive review extracting themes and reporting them to reveal the type of evidence and the trends within these papers. As such this paper provides a snapshot of recent advancements in the way the clinical concept of subluxation is able to allow reports of practice within the chiropractic literature. I also identify trends that emerged from my analysis.

Indexing Terms: chiropractic; subluxation; descriptive review; clinical evidence; chiropractic trends

Introduction

With COVID-19 casting a shadow across most of the past three years, it may have been expected that the reporting of chiropractic research would suffer given the pressures on chiropractors and on economic factors more widely. However, the period from 2019-2022 has seen significant developments in the chiropractic evidence base.

This recent time period included the establishment of the *Journal of Contemporary Chiropractic* which officially launched in 2018, and the launch of this masthead, the *Asia Pacific Chiropractic Journal*. Both are open access and dedicated to serving the profession through high-quality, easily accessible chiropractic evidence but covering different geographical focal points. The journals have increased the availability of clinical data and evidence and this complements work by the McCoy Press group which continues to publish case report data as a matter of course in addition to larger studies across its multiple journals.

While larger studies remain time and resource intensive, they did feature in the research emerging in the literature over 2019-2022. However, the most notable feature of the time

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window is that of case reports and case series. While no generalisations can be made based on these stand-alone papers, some notable trends have become clear. The purpose of this descriptive review is to offer a snapshot of the volume and nature of recent subluxation-based research.

Method

A database search of the *Index for Chiropractic Literature*, using the keywords 'subluxation' and the year '2019-2022' was paired with a Pubmed and Ovid-Medline search of English language, peer reviewed and human-based papers containing 'subluxation' and variations of the word 'Chiropractic.'

The initial search returned 243 papers which were then sorted to exclude commentary or philosophically based papers and feasibility studies. The remaining studies were either clinically-based case reports or randomised controlled trials and other clinical studies. Following the application of exclusion criteria, 140 studies remained. These comprised a combination of larger studies (three randomised controlled trials, one uncontrolled trial and a systematic review), and more than 130 papers based on case report data. The latter included ten case series' papers.

Trends

Stroke Studies

Three of the largest studies published during this period were on the topic of stroke. The first, published as Holt et al in 2019 examined the effects of a single session of chiropractic care on plantar flexor muscles in chronic stroke patients. This built on previous research finding no evidence for causation in cervical artery dissection, (Church et al 2016) and on research by Christiansen et al (2018) which found chiropractic care increased cortical drive to the muscles in athletes. A noteworthy implication of Holt's stroke study was that measures of spinal cord excitability increased after the single session of chiropractic care.

In 2021, Holt et al followed this study with a randomised controlled trial examining the effects of four weeks chiropractic care on motor function in stroke patients. This paper indicated statistically significant differences between the group receiving chiropractic care and the group that did not. The group receiving both chiropractic care and physical therapy showed improved outcomes across motor function for combined upper and lower limbs in comparison to the group that received physical therapy alone.

This was complemented by EEG findings in a study investigating the effects of chiropractic spinal manipulation in stroke patients, (Navid et al, 2020) and a case report that also indicated improved neuroplasticity post-stroke in a 72-year-old male. (Remeta et al, 2021)

Emerging techniques in Chiropractic

A systematic review published during this time span pertained to a relatively new technique, *Chiropractic BioPhysics™* (CBP), and focused specifically on reducing lateral thoracic translation postures using CBP. (Oakley and Harrison, 2022) The review included one clinical trial involving 63 chronic low back pain patients as well as 23 asymptomatic controls, and six individual case reports. These all showed significant improvements in lateral thoracic translation postures chiropractic care using CBP techniques. The clinical trial showed a more conservative 8mm reduction after an average of 36 treatments over 11.5 weeks and coincided with a 2-point reduction on the numerical pain scale. The case reports, however, showed a higher average reduction of 23mm over a 3.7-month period and a 4-point drop on the numerical pain scale. (Oakley and Harrison, 2022)

Overall, 12 case reports featuring CBP were published by McCoy Press and the *Journal of Contemporary Chiropractic* during the prescribed time window. Themes emerging from these case reports centred on structural improvements such as posture, sagittal balance, lateral subluxation (pseudo scoliosis), straight back, and spondylolisthesis. Other symptomatology was noted in the works, but the case reports focused on the structural and resolution of subluxation using the CBP method. Eleven case reports pertained to the adult population while one looked at a paediatric case of sagittal lumbar alignment in an asymptomatic 9-year-old. (Fedorchuk, Lightstone and Baca, 2019)

One large, uncontrolled study looked at motor function in 100 chiropractic care participants and found significant improvements in grip strength. (Ng, 2020) This study involved the Koren Specific Technique, which is a technique not often represented in literature at this time. The increase in grip strength follows earlier work by chiropractic neuroscientist Heidi Haavik and others who have undertaken significant investigation into the impacts of chiropractic care on cortical drive. (Lelic et al, 2016; Haavik et al, 2017; Haavik et al, 2018) The motor strength improvement was also noted in a case report by the late David Russell. (2021) However, it should be noted that this case report also had the dual impact of reporting on a stroke survivor and his rehabilitation concomitant with chiropractic care. In this case report, balance and dysautonomia also improved.

A final emerging protocol noted in the literature during this period is that of the *Averio Institute's* concentrated care program, noted in two case reports by Kolterman et al. (2022) In both cases, patients underwent two courses concentrated care involving week-long inpatient stays at a care facility where chiropractors delivered multiple adjustments in a short time. One case reported the medical reversal of a Lupus diagnosis in an 18-year-old female, which is notable as reversal of an autoimmune disorder is rare. The other reported increase in memory and balance in an elderly patient. Both cases involved a battery of tests pre and post care to confirm the clinical and symptomatic shifts.

Psychological presentations

The randomised controlled trial published during this period presented insight into an emerging area of chiropractic research, that of psychological symptoms. The study looked at men in residential treatment for addiction and studied them for 90 days. (Vaden et al, 2020) The aim of the study was to '*determine if P300 wave analysis has significance as an outcome assessment of subluxation-based chiropractic care in the addiction treatment setting*'. Researchers used the *Beck Depression Inventory* and the *Speilberger State-Trait Anxiety Questionnaire* as well as the *P300* analysis.

The study found that '*in the chiropractic group, depression scores improved by 97%, anxiety scores improved by 36.5% with 100% retention rate in the chiropractic group and 0% retention rate in the placebo group*.' P300 waves also improved significantly in the chiropractic group. The study, which used Torque Release Technique as well as *Integrator* adjusting, did face some limitations in that retention in the placebo group offered up poor control group data. However, it remains groundbreaking research into psychological presentations, addiction, and chiropractic.

Case report data also revealed resolution of psychological symptoms in three individual case reports. The first was resolution of psychogenic, non-epileptic seizures concomitant with chiropractic care. (Friedman and Puro, 2019) The second featured reduced anxiety symptoms in a person undergoing chiropractic care. (Russell and Glucina, 2019) The third of the trio involved reduction in cortisol levels and anxiety in a patient undergoing chiropractic care for original presenting symptoms of neck pain and headache. (Hughes, 2020)

Rounding out the adult population's case report data was a case series covering reduction in dysautonomia and anxiety in five adults. (Steinberg et al, 2020)

While psychological presentations span a wide range of potential disorders, it is also noteworthy that several case reports noted improvements in neurodiverse paediatric patients (that is, patients with ADHD, Autism or Asperger's). While none of the case reports in question made claims to cure any such disorder, they all made note of improved management of the presenting condition.

Steinberg et al (2022) noted improved physical resilience and management of ADHD in a 12-year-old male under chiropractic care. Fairest and Russell (2019) reported on improvement in behaviour and attention in a 7-year-old girl with ADHD who was receiving chiropractic, and Stone and Alcantara (2019) reported on improvement in behaviour, anxiety, and pain in a 9-year-old male with Asperger's. Another notable case report psychological presentation was Stone and Alcantara's case report featuring improved sociability, health, physical behaviour, and headaches in a child with ADHD and obsessive-compulsive disorder.

Positive behavioural changes as well as improvements in dysautonomia were also noted in an adult with Autism in one case, which reminds the reader adults can have Autism. (Pellegrino and Lightsey-Santos, 2021)

While the mechanisms behind such improvements are yet to be determined it does indicate that subluxation-based care may assist in management of such presentations and as such warrants further investigation. One limitation of these case reports, however, was the absence of a psychologist. While this does not negate the value of self-reported symptomatology and the resolution of improvement of it, whether by the patient or their carer, it does give room for larger trials to examine and expand upon the findings.

Immune-related presentations

Another theme emerging from this period's case report data was that of immune-related conditions. Two cases reported on improvements in symptoms associated with Rheumatoid arthritis. (Chu et al 2019; Slagel, 2019) One case reported on reduction of symptoms in *Meniere's* disease. While approximately one third of cases of the condition are of autoimmune origin, it remains unclear if this presentation was immune related or not as trauma was noted at the onset of the disorder some 18 years ago. However, rheumatological input into the management plan had been a factor in recent years. (Grey and Ellis, 2019) One other case of Meniere's disease showed significant improvement under chiropractic care, however, it was also unclear whether this was of autoimmune origin. (Stephenson, 2020)

Chronic sinusitis appeared in one adult case. (Luc, 2022) Allergies presented in two paediatric cases also presenting with nocturnal enuresis, (Herring and Wright, 2020; Steinberg et al, 2022) and in one case of allergic colitis with comorbid colic, plagiocephaly and breastfeeding difficulties in an infant. (Hom and Shikada, 2021) The final adult immune-related case of note is that of resolution of long COVID concomitant with chiropractic care. (Masarsky and Todres-Masarsky, 2022) This is perhaps a topical issue of which we may see more literature emerging in the near future.

One case of fibromyalgia and two cases of hypothyroidism also contributed to immune-related data. (Dunton and Hirshowitz, 2020; Wallis and Cuvillo, 2020; Reimer, 2020) A novel case report also examined the resolution of periodic fever syndrome in a 3-year-old patient. (Ullman et al, 2022) Eczema, allergies, and insomnia were also reported as improving in another paediatric chiropractic case involving a 4-year-old. (Knowles, Knowles and Sunakawa, 2021)

In a novel case, an 18-year female with Lupus had her diagnosis reversed following two periods of concentrated chiropractic care as noted earlier. (Kolterman et al, 2022) This diagnosis and its subsequent reversal was confirmed by her primary health care provider (her doctor), and it should be noted that this is quite rare as the goal for autoimmune conditions is remission not cure.

Paediatric chiropractic care

While paediatric cases have been noted in the above sections, paediatric chiropractic care and its effects was represented significantly during the chosen period. While it is impossible to ascertain causation, it should be noted that political attention on the issue in the State of Victoria, Australia, created increased scrutiny on the issue and may have prompted increased attention and creation of case-report evidence in response.

Five case series' were published during this time: one covering five cases of improved adaptability concomitant with chiropractic care, one covering seven cases of tethered oral ties, one covering five cases of reflux and one covering improved range of motion. (Dukovac, 2022) All of these showed resolution or significant improvement under chiropractic care. The fifth case series covered improvements in plagiocephaly and other health outcomes. (Hirshowitz and Swenson, 2019)

While the presentations within the paediatric cohort of case studies are many and varied, repeating themes included the following:

- ▶ Breastfeeding issues

- ▶ Gastro-intestinal reflux
- ▶ Plagiocephaly,
- ▶ Bedwetting, constipation, or encopresis
- ▶ Sleep disturbances
- ▶ Ear infections (including repeated ear infections)
- ▶ Birth injury
- ▶ Improved adaptability or coordination

Colic was not highly represented in the literature during this period, perhaps indicating that chiropractic focus on this condition has decreased given the prevalence of earlier data on positive outcomes with colic. The discipline seems to now be at the point where conventional chiropractic care for colic is considered evidence-based best practice for infants with colic.

Novel presentations included one case of improved health outcomes in a 13-year-old with *May-Thurners syndrome*, one case of developmental delay that improved under chiropractic care, and two cases of failure to thrive that resolved under chiropractic care. Colic and croup only appeared in one case report each.

Other noteworthy case reports

It should also be noted that issues pertaining to women's health and fertility were recorded in four case reports:

- One noting the resolution of secondary amenorrhea and infertility which resulted in successful conception; (Teets and Jordan, 2021)
- One case of successful pregnancy following chiropractic care (after more than two years trying, but failing to conceive). This was reported by Stephenson. (2022)
- One noting the resolution of dysmenorrhea following chiropractic care; (Wozniak and Schultz, 2021)
- There was one case of resolved symphysis pubis in a pregnant woman; (Shtulman, Miller and Alcantara, 2019)
- Notably, a case series revealed five resolutions of breech positions by Mulcahy and Mayo. (2019) All of these were confirmed via ultrasound both diagnosis and resolution. Stone-McCoy and White also observed resolution of another breech position in a single case report published in 2020. This was complemented by another single case report revealing resolution of a transverse breech presentation and successful VBAC following chiropractic care. (Stone-McCoy and McNeill, 2019)
- A final pregnancy-related case report featured the resolution of low back pain and *placenta previa* following chiropractic care. This is noteworthy and may warrant further investigation given the potential risks associated with *placenta previa*. (Urban and Alcantara, 2019)

Structural improvements, headaches, neck pain and migraines were significantly represented in case report data. In fact, this included six case reports on migraine and headache, and nine case reports on structural improvements such as reduction of lateral sway, spondylolisthesis and three case reports featuring balance issues. One such case report also featured an improvement in memory which made it a novel case report that stood out. (Kolterman et al, 2022) This also included one case of paediatric scoliosis improving in a thirteen-year-old. (Marsilla-Alarcon et al, 2022)

Dysautonomia is a common occurrence in chiropractic literature which also featured in two case reports during the given period. Also unsurprising is the inclusion of three trauma-related case reports, one case of trigeminal neuralgia and two of frozen shoulders resolving under chiropractic care. Among the non-musculoskeletal presentations in this cohort, however, is one case of muscular dystrophy where management improved under chiropractic care, one case of severe *tinnitus* and *hyposcusia* improving under chiropractic care, and one adult case of nocturnal bowel hyperactivity

that also resolved under chiropractic care. Another novel report was that of *anosmia* resolving under chiropractic care. All four of these warrant further investigations as they are not common inclusions in chiropractic literature.

Discussion

The high prevalence of immune and paediatric related papers is unsurprising given the then political and chiropractic discourse that occurred during and immediately prior to this period. This includes the *World Federation of Chiropractic* offering [commentary on chiropractic's role in immunity](#) which drew responses from multiple chiropractic sources.

The other political issue was that of paediatric chiropractic care which became topical in 2019 when the issue rose to the spotlight in the Australian State of Victoria and the *Safer Care Inquiry into Chiropractic Spinal Care for Children under 12* occurred. The consultation amassed 21,824 responses from people who had accessed chiropractic care for their children, and 2,735 responses from healthcare practitioners. (Australian Chiropractors Association, 2019) These were overwhelming in support of paediatric chiropractic care and preceded notable trend towards paediatric case reports. Plausibly, though unproven, this may have been inspired by the increased scrutiny on paediatric practice.

Likewise, previous discourse on the issue of stroke may have prompted large trials which have not only proven there is no evidence for causation, but also indicated that there may be a role for chiropractic care in the rehabilitation of stroke patients.

While case report data features heavily in the evidence published during this time, and not all case reports have not been mentioned due to their volume, it should be noted that this type of evidence is valuable for the chiropractic profession for several reasons. As Ebrall and Doyle argued in the *Chiropractic Journal of Australia* (2020) the hierarchical pyramid of evidence is considered outdated for complicated clinical disciplines and clinical practitioners as it derives from a way of thinking more suited to hospital-based medicine or pharmaceutical trials which rightly require controlling for other factors when determining the effectiveness of a treatment. This is incongruent with the chiropractic model of care which works with the patient's full clinical reality, including other care modalities, medications and at-home factors should they be present. Case report data also provides clinical evidence and insight that other chiropractors may glean insight from straight away. Finally, case reports can inform further research.

Limitations

This descriptive review of the literature was limited only to English-language papers. Papers published and indexed after December 7th, 2022 were not included. The majority of the current evidence has been published in the form of case reports or case series', which points to a lack of larger, more generalisable studies.

Conclusions

The chiropractic evidence base has grown significantly over the past three years. This has seen larger trials undertaken addressing topical issues from previous years, such as stroke rehabilitation, and with discourse on and support for case report data within the chiropractic cohort becoming a focus.

Given that this period of time has been marked by a global pandemic, and has still yielded notable growth in the evidence base, it places chiropractic research in a strong position going forward.

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Cite: Mclvor C. Chiropractic Care for Subluxation: A descriptive review of the literature 2019 - 2022. Asia-Pac Chiropr J. 2023;3.3. URL apcj.net/Papers-Issue-3-3/#MclvorDescriptiveReview

Declaration

The Australian Spinal Research Foundation funded several case reports featured in this data capture and have contributed to funding on stroke research. Clare Mclvor has co-authored several case reports also appearing in this descriptive review.

Funding for this original inquiry was provided by the Australian Spinal Research Foundation.

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