

Preserving the chiropractic subluxation: A narrative literature review of research for and against the controversial diagnostic term

Jasmine Eldemire

Abstract: *Background* For decades the chiropractic profession has faced internal and external conflicts surrounding the scope, beliefs, techniques, and ideologies of practitioners. Most literature discussing these facets of the profession have defined two specific groups that are either practicing 'orthodox' or 'unorthodox'. Previous gaps in research and conflicting evidence have suggested an inquiry into whether using the term 'subluxation' is still valid for the future of chiropractic diagnosis, treatment, and management. And what impact does the term have on solidifying the profession's unique identity within the medical model and demand for patient-centred care.

Design A narrative literature review.

Methods A review of available literature was conducted and produced 317 results across multiple databases. 146 articles were then identified and a collection of 15 articles then met the inclusion and exclusion criteria for answering the clinical question. A Narrative Review Checklist and Summary of Significance were assessed on the strengths and limitations of these articles in forming an objective discussion on the validity of chiropractic vertebral subluxations.

Results Narrative reviews have been the main form of research on the topic of vertebral subluxation. Whilst this has allowed for very interesting insights and strengths of literature progression, it has limited the tangible progression of the chiropractic subluxation premise.

Conclusion Whilst there is discouraging research available that aims to invalidate the chiropractic subluxation, there is also robust evidence in favour of this term. It seems reasonable to say that assessment and treatment of subluxations hold a significance in this identity of chiropractic and should not be dismissed as archaic but celebrated as unique and cause for further research.

Indexing Terms: Chiropractic; subluxation; vertebral subluxation; evidence-based practice; chiropractic philosophy; chiropractic curriculum

Introduction

This paper aims to explore current available literature on the premise of chiropractic subluxations through a political, clinical, scientific, and logical perspective. The motivation for this study has come from working in chiropractic practices and observing many forms of patient-centred care. Through a mentor discussing philosophical chiropractic history and introducing the term 'subluxation' to my studies, I have ever since been fascinated with the

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need for scientific validation and harmony within the profession. This concept of subluxation has been noted as a central focus of chiropractic theory and practice and has been embedded in the history of the chiropractic profession. (1)



Subluxation

Peter Rome is an Australian chiropractor who graduated from *Canadian Memorial Chiropractic College* (CMCC) in 1969 and is a notary in Australian chiropractic research. His early publications noted an integral differing consideration for using the term subluxation as there is scientific difference between a '*chiropractic subluxation*' and a '*medical subluxation*'. (2) Rome and Waterhouse's more recent publication (2) defines Vertebral Subluxation as '*the abnormal function of one or more of the spinal articulations which may lead to altered neuropathophysiological functions through somatosensory activation*', continuing to express that this premise, though challenged, is still valid and cannot be dismissed. (3)

Aim

And so, comes the need to investigate this topic further in order to enrich the chiropractic profession and understand differing of opinions. The intention is to answer the question of whether using the term subluxation is valid for the future of chiropractic diagnosis, treatment, and management. Of course, when discussing any health profession, it is imperative that the three pillars of evidence-based medicine (EBM) are fulfilled. (4) Sackett's model from 1996 (4) expresses to stay mindful that even though it is critically important information, evidence is not just what we see from clinical trials. It also exists in what practitioners do in daily practice through the integration of clinical evidence, patient values, and practitioner expertise. This universal EBM knowledge aids in understanding the impact that subluxation has on solidifying the chiropractic profession's unique identity in the medical model and for patient-centred care.

By including articles that differ in opinion to my own, the search is broadened and thus the credibility of answering the research question. After consideration of the chiropractic profession being sought after an effective for diagnosis, treatment, and management of musculoskeletal conditions, it is also important to recognise the history and philosophy of our profession. (5) The contribution this paper is attempting to highlight is to clearly articulate the unique role of the chiropractor in the medical model and the benefits to patients through conservative care.

Methods

Search strategy

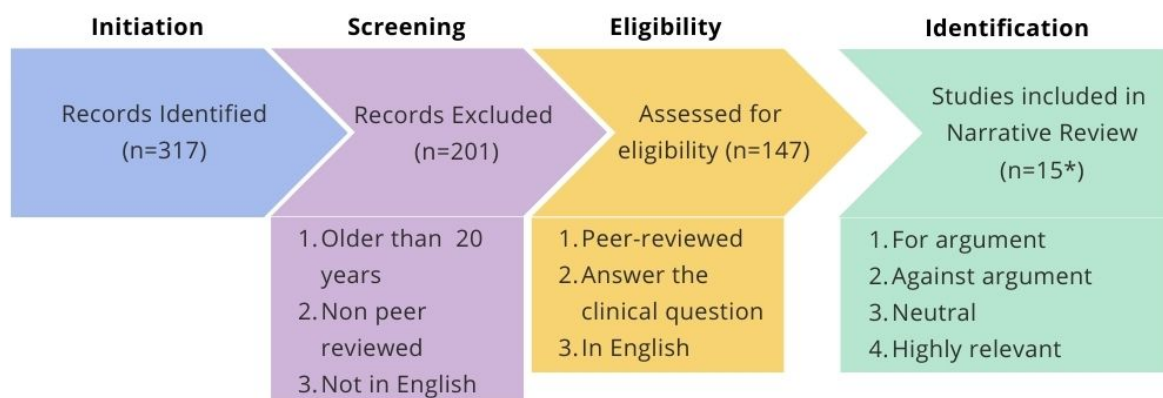
The databases used included PubMed, Google Scholar, and the CQUniversity electronic library search engine. Key search terms included chiropractic, subluxation, vertebral subluxation, evidence-based practice, chiropractic philosophy, and chiropractic curriculum. A truncation asterisk was used to retrieve all forms of chiropractic terms. For example, [chiropract*] allowed articles with *chiropractic*, *chiropractic's*, *chiropractor*, and *chiropractors* to be included. The screening was refined to full-text online and peer-reviewed articles, with publication dates set between 2002 to 2022.

A review of the literature was conducted and produced 317 results. 146 articles were then chosen for screening through the inclusion and exclusion criteria. Of these articles, 23 met the criteria for exploring and answering the research question and 15 have been used for this narrative review. In order to critically appraise the quality of these articles, a *Narrative Review Checklist* was used, and a summary of the literature significance was developed. With 5 for, 5 against, and 5 neutral in viewpoints, the risk of bias has been adhered to. This narrative review has also been formed with discourse that builds upon previous learnings with consideration of mentor feedback. (6)

Selection Criteria

Articles with arguments that were for, against, and neutral on the research question were included to reduce risk of bias, form an educated narrative review, and identify any gaps in research with potential for future study. Other criteria involved including only papers in English, have been peer-reviewed, and have been published in a respected journal. The exclusion criteria was any systematic

reviews undertaken in the last five years, any articles not in English, publications greater than 20 years old, publications that do not answer the clinical question, and articles not published in a peer-reviewed journal. See Figure 1.



*Other peer-reviewed articles were used for justification/definitions.

Figure 1. Literature Search Flow Chart

Results

With a total of 317 publications retrieved from three databases the screening process identified 15 articles that specifically addressed the research question. As there are less critical appraisal tools for narrative reviews, a Summarised Narrative Review Checklist (Table 1) and Summary of Literature Significance (Table 2) have been utilised in order to provide a well-informed synopsis of the results. Table 1 lists the items required for narrative reviews in order to evaluate the validity of the available literature. The most common points missing were the objectives and research selection sections of the articles, with 6/15 absent for both points. This may be due to the historically unstructured nature of this topic and the broader landscapes to explore that come along with the field of applied science. (7) It may also be considered that this topic has been explored mostly in a reflective nature, adding to the call for further research as each definition of reflection will have different outcomes. (8)

Discussion

I have included three different viewpoints as criteria in the literature search in order to provide argument as to why subluxation is an important condition that is valid in the chiropractic profession's identity. These viewpoints are from the position of neutral, for, and against the term subluxation, aka chiropractic vertebral subluxation (CVS).

Neutral

There is clear division within the chiropractic fraternity around subluxation terminology and the available literature transverses social, economic, scientific, and cultural questions. (9) These divisions are highlighted by the concern and conflict that the subluxation is what separates the profession from other health care professions as chiropractic professional identity. (10) However, possible errors in historical publications may have affected today's interpretation of CVS concepts and validity not just from chiropractic institutions and amongst the profession, but majorly so for other medical professions. Historically, the standard medical definition for subluxation is 'a traumatic partial dislocation of the spine' (11) which gains us better insight into the reasoning for the medical profession's general negative reaction to chiropractic spinal manipulation. Although, the degree of displacement is significant as there is a potential for causation of symptoms even with minimal vertebral disturbance.

Subluxation has come to have many different meanings for many health care professionals, as well as individual chiropractors, (2, 12) therefore it is reasonable to suggest that this is a valid area for future inquiry.

For

Chiropractic treatment is performed through identifying a functional spinal lesion associated with mechanical joint pathophysiology, anatomical structures, surrounding soft tissue structures, and neurosensory changes. These physiological disturbances are defined as the vertebral subluxation. (3)

The *World Health Organisation* (WHO) adequately describes this lesion and whether one considers the term hypothetical, historical, or contextual, it is still clinically relevant. Not only this, but chiropractic patients have reported healthcare benefits surpassing their periods of therapeutic care and their presenting complaints, (13) which is the third leg of the EBM model. Russell further discusses the fact that evidence suggests the concept of vertebral subluxation is a central and accepted feature in chiropractic practice as understood by chiropractic students. He reports a study of 58.4% of Australian and New Zealand students holding this view. (13) In fact, about 70% of Australasian chiropractors identify subluxation in an evidence-informed context, (14) as Ebrall further states in his argument that conventional chiropractic is evidence-based and is represented by Palmer's Principles of Chiropractic. (14)

Though the evidence so far in this category is of significance, another article by Ebrall highlights that there is currently no quantitative data of subluxation as it is still only a philosophical diagnostic tool. (15) However, he further suggests that it is unproductive in '*proving*' the existence of subluxation as it is already a valid clinical construct underpinning daily chiropractic practice. There are also suggestions for reconciliation within the chiropractic profession about clinical behaviour and patient outcomes in the absence of quantitative evidence. (15) Leach (5) makes a compelling argument that chiropractors should not have to choose between philosophy and science, as adapting and modern questioning of philosophy can be strengthening and not only informs clinical decision making for best EBM, but also drives further scientific theories and can influence future research to further strengthen the profession.

Against

Wong et al. express that patient profiles and chiropractic treatment approaches based on individual principles can help guide patient expectations and communication for informed care. (16) These principles are noted as either '*orthodox*' or '*unorthodox*' and play a role in whether a chiropractor collaborates in practice with other/multiple health workers. However, results found that chiropractors with an '*unorthodox*' viewpoint treat patients with non-musculoskeletal conditions. (16) These study results have opened the discussion of informing inter-professional collaboration between healthcare providers and chiropractors. There are deterring factors for these health professionals to refer to chiropractors as some evidence suggest that the websites for some clinics have a substantial use of vertebral subluxation and this may be cause for concern amongst regulatory bodies. (17) This study is limited to Canadian chiropractors practicing in Ontario and has minimal discussions on why chiropractic subluxations are viewed in this negative light.

This further highlights Rome and Waterhouse's commentary that disclaimers of the subluxation complex must offer an alternative rationale with details of justification for their findings and therapy plan. (3) This author sees the objective of Marcon et al. as inequitable towards the chiropractic profession and suggests further research is needed to make their claims valid. Villaneuva-Russell (18) emphasises the debate amongst chiropractors and regulatory bodies for the proper application of care. She discusses the two different types of chiropractors as previously noted in this paper, and how contrasting the views are. This is then seen through external pressures that have created a need to remain financially viable while accommodating science. There is room, however, for suggestion of allowing everyday chiropractors meaning participation in the discourse over professional identity and cultural authority, and that this could be beneficial to the chiropractic profession. (18)

Nim et al. (19) continue the discourse that there are clearly two divided groups within the chiropractic profession that adds to '*appropriateness*' amongst chiropractic students in Denmark. However, this report gave clear indication that there were limitations and that the association between styles of practitioners and their abilities to make sound clinical decisions did not reach

statistical significance. (19) Finally, Goncalves et al. (20) continues to challenge the subluxation premise stating flaws in validity of the current models but again fails to give rise to alternative models.

I agree that here the current literature is void of certain points of credibility as it exists purely as a construct, and for the chiropractic profession to maintain credibility it needs to do further research into the prevention of disease (20) in order to preserve this term, strengthen its philosophical roots and translation into daily practice, and maintain the unique entity of chiropractic.

Limitations

In traditional academic views, narrative reviews can have their limitations when there is minimal qualitative and quantitative data available to be studied. Though this topic has been thoroughly researched with an abundance of literature, the selection criteria has still been limiting. A risk of bias is also involved through the personal experiences and viewpoints of this author. The paper aimed at being a more synthesised approach to past narrative reviews, however, further research into this topic would be beneficial to evidence based musculoskeletal medicine. This paper encompasses research from a range of articles globally and this may be seen as a limitation towards the Australian chiropractic profession.

Conclusion

In closing, this narrative review of available literature has illustrated that there is a clear divide still in existence amongst the chiropractic profession and that this conflict is felt also by external sources. I believe it would be very interesting and beneficial to the chiropractic community, particularly graduating chiropractic students, to have access to scripts and discourse used by pinnacle Australian chiropractors when delivering patient education. Understanding how vertebral subluxation has been used for decades in diagnosis, treatment, and management in a way that is patient-centred, evidence informed, and through enabling positive biopsychosocial space for healing.

I share similar views with Chapman-Smith (1) that the next generation of chiropractic research should be optimised to better understand the vertebral subluxation. There are strengths and limitations of the concept to be appreciated and used as building blocks for future research. I agree that the term should be used within the profession to help provide a common historical, educational, and clinical foundation that sets us apart from other health care providers as experts in this field and an integral part of patient-centred care. However, I also see no reason as to why chiropractors should be solely defined by this premise as they explain various diagnostic findings and management plans to patients and other health care professionals. (1)

Another area of interest for future research could include '*enabling*' versus '*disabling*' discourse when explaining the subluxation to patients and other health practitioners as in my experience it has been used to leverage fear. Presenting subluxation as a diagnostic term without fear-mongering of patients to seek care may be more beneficial in minimising the current professional divide. It is implied that all chiropractors should understand the term and be able to use it as a tool for treatment, however, using lay terms and enabling discourse should be the goal for connecting with patients and gaining informed consent. Therefore, maintaining patient-centred care that is received in a positive light and aids in healing, management of musculoskeletal conditions, and wellbeing.

I have also found that the lack of the term's usage in Australian curricula has been disadvantageous to chiropractic students as there is a gap in this knowledge from a historical point of view. Research into this could aid in developing practitioners with a higher sense of purpose and solidifying the Australian chiropractic profession. I believe that this paper is unique as it is written from a chiropractic student's perspective with influence of many 'everyday' chiropractors that have been aiming at strengthening the research and profession through preserving the subluxation premise.

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Disclaimer

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Appendices - Tables

Table 2
Summaries of Literature Significance (in order of reference list)

Reference & Standpoint	Strengths	Limitations
2018 Senzon (Part 10) Neutral	<ul style="list-style-type: none"> - Reviews and discusses the history of CVS during 1996 and 1997, with this period showing trends in the need to develop consensus statements - Reflects that chiropractors and other health professionals continued to come up with new words for subluxation, had conflicts to how they should be defined, a lack of understanding and acceptance for the term, and a need to build a bridge between chiropractic definitions and medical definitions - The term subluxation already had a definition when chiropractors adopted it and gave it a new definition, accepting that there was/is a defined scientific difference between a 'medical subluxation' and a 'chiropractic subluxation' - Raises issues of previous omissions of literature for potential reasons such as dismissivism, interprofessional politics, gatekeeping, scholastic error, and lack of indexing source literature - Presents a challenge in integrating the best from all historical and modern ideas with the rigors of science and the tools of philosophy - Being informed by the history of ideas is a powerful method that we can use to evolve as a profession 	<ul style="list-style-type: none"> - Expresses reflections of one person's interpretation of historical chiropractic content - No detailed search parameters, inclusion & exclusion criteria, synthesis methods, a standard critical appraisal tool of the literature reviewed, and evaluation of bias
2019 Rome & Waterhouse For	<ul style="list-style-type: none"> - Discusses the science, logic, and politics of the evidence surrounding the hypothesis of the vertebral subluxation - Stating that clinically and legally there has to be an entity that practitioners identify, diagnose, resolve or manage, and how the evolution of the term satisfies this requirement based on current clinical and research evidence - Suggesting that if previous disclaimers of the subluxation complex must offer an alternative rationale with details justification for their findings and therapy - Summarises that there appears to be a double standard with medical care continuing with theories and anecdotal evidence, yet suggests that other health professions should not - It is possible that a more appropriate and comprehensive rationale may eventually promote the current understanding of the vertebral subluxation premise 	<ul style="list-style-type: none"> - None have been provided by the authors - Author/s bias is assumed
2019 Leach For	<ul style="list-style-type: none"> - Questions the practice behaviours, activities, and outcomes of chiropractors - Analyses the philosophical importance of the subluxation and demonstrating chiropractic integration within the wider health community - Compares arguments of chiropractors arguing that care should focus on musculoskeletal health without philosophy - Highlights that one of the main barriers to scientific validation is the inflexibility of holding on to the subluxation theory - Philosophy can serve as a description for what we collectively believe especially when guiding clinical decision making - An opportunity for strengthening and excelling the profession when/if philosophical hypotheses can be turned into substantial research 	<ul style="list-style-type: none"> - No detailing of the research selection criteria - Bias viewpoint of a single author and article does not capture all views - theory-based approaches have only been generally & briefly discussed
2018 Senzon (Part 1) Neutral	<ul style="list-style-type: none"> - Highlights the importance of the need for understanding chiropractic history for the future of the profession - Explores the history of the chiropractic vertebral subluxation (CVS) - Claims that most chiropractors are content with the traditional CVS model despite previous flawed surveys - Provides details for future research through this substantial claim - States errors in historical publications that may have affected today's interpretation of CVS concepts and validity 	<ul style="list-style-type: none"> - Expresses reflections of one person's interpretation of historical chiropractic content - No detailed search parameters, inclusion & exclusion criteria, synthesis methods, a standard critical appraisal tool of the literature reviewed, and evaluation of bias
2018 Funk et al. Neutral	<ul style="list-style-type: none"> - Explores the divide in teaching and using subluxation in global chiropractic curriculum - Assessed chiropractic institute websites and available curricula profiles, as well as contacting institutions directly - Notes that those in favour of the subluxation construct have five primary rationales: professional identity, philosophical, technical, legal, and accreditation - The term is eight times more prevalent in US curricula than non-US courses and accreditation of the US and Canadian standards still use the term subluxation 	<ul style="list-style-type: none"> - Unable to obtain full access for data collection - Unable to determine what is taught

2011 Johnson Neutral	<ul style="list-style-type: none"> - Subluxation has come to have many different meanings for different health care professionals - Some current chiropractic factions hold the term to be synonymous with the identity of chiropractic itself, however, this term was not solely used by chiropractic during its formative years - One can better understand the medical profession's historically negative reaction to manipulation of a vertebral subluxation by reviewing the standard medical definition for this term: a traumatic partial dislocation of the spine - Assume that medical practitioners at the turn of the century who read the writings of chiropractors (such as DD Palmer or founders of osteopathy) would be wary of anyone that should be applying manipulative forces to "luxated" spines and that these remarks have shaped the stigma of the profession since 	<ul style="list-style-type: none"> - No limitations were stated by the author
2008 Smith & Carber Neutral	<ul style="list-style-type: none"> - Suggest that contemporary practicing chiropractors are capable of reconciling complex notions of health, wellbeing, and dysfunction, by tailoring specific care for specific disorders in specific patients - Future research is needed in the agenda of further advancing chiropractic as a clinical discipline and valued health care choice - Chiropractors seem to embrace "subluxation-based" terms as well as other clinical approaches to describing their care for patients 	<ul style="list-style-type: none"> - Limited survey sampling to one country - Didn't offer a definition but allowed each participant to provide their own definition suggesting responses may have been different had a definition been provided initially - Not scientifically robust data and collection methods
2019 Russell For	<ul style="list-style-type: none"> - Focuses on core clinical objectives in the assessment and correction of vertebral subluxations - Debates legitimacy of the term subluxation - Discusses perspectives of practicing chiropractors, chiropractic students, public perception, and patient education - Highlights gap in evidence for lack of documentation of direct indicators of subluxations 	<ul style="list-style-type: none"> - Single author publication and author bias is noted - Validity of individual models of using subluxation as a diagnostic tool
2020 Ebrall For	<ul style="list-style-type: none"> - Aims to discuss and define the identity of chiropractic - A number of conditions treated by conventional chiropractors, including subluxation, are present in the International Classification of Diseases (ICD-10-CM) - Studies expressions of chiropractic identities and that vagueness envelops the professional identity - Explores history of the chiropractic profession development and how this is now expressed - States conventional chiropractic is evidence-based and is represented by Palmer's Principles of Chiropractic - Concessional chiropractic is that which ideas have no contemporary credence and deviate from the conventional professional identity to those that are original concepts of the individual 	<ul style="list-style-type: none"> - Single author publication with noted axiological bias towards use of term subluxation
2021 Ebrall For	<ul style="list-style-type: none"> - Despite chaos in representations of individual chiropractors and their own perspective/definitions of their profession, it has not slowed the growth of the profession or the satisfaction gained by patients - Importance of practitioner providing patient-centred care and clinical decision making – and how these decisions differ from clinician to clinician - States that spinal manipulation with or without vertebral subluxation as treatment remains open - Perspectival truth of the author is that subluxation can be considered as being the meaning which a trained chiropractor gives to a standardised set of clinical findings - Has strong intent for interpreting subluxation literature through evidence-based medicine 	<ul style="list-style-type: none"> - Single author publication with noted axiological bias towards use of term subluxation - It is suggested that there are approximately 105,000 definitions or understandings of chiropractic practice that come from each individual practitioner, ensuing chaos for the profession
2021 Wong et al. Against	<ul style="list-style-type: none"> - Chiropractors have diverse views of practice related to the health conditions they treat - Gives definitions to 'orthodox' and 'unorthodox' views and practices of Ontario chiropractors, with unorthodox being those that perceive vertebral subluxations as a negative effect on the body's innate ability to heal, which can be corrected through spinal manipulation - Found that 80% of these chiropractors held an orthodox view and the remaining 20% were unorthodox in practice - Used a number of approaches to minimise measurement error with O-COAST used as a valid and reliable method of recording patient encounters in the primary care setting - Sensitivity analyses were also conducted to explore potential misclassification of unorthodox views - Concludes that chiropractor experience level explained a high proportion of the variability of chiropractors with an unorthodox view - Describing the patient profiles and treatment approaches of chiropractors based on view of practice can help guide patient expectations and communication when making informed patient-centred decisions - Communication related to diagnosis and types of conditions treated may facilitate inter-professional management to improve patient outcomes 	<ul style="list-style-type: none"> - Potential selection bias from the sample of participating chiropractors - Association between chiropractors' views of practice and patient health characteristics are based on one time point only

<p>2019 Marcon et al.</p> <p>Against</p>	<ul style="list-style-type: none"> - Highlights divisions in the chiropractic community surrounding the use of subluxation theories - Addresses need for regulatory bodies - Examined how often subluxation concept is promoted and used for marketing chiropractic services - Analysing discourse surrounding vertebral subluxation - Provides insight into the chiropractic websites chosen marketing chiropractic services that are unscientific - Identified fear-creating discourse in an attempt to leverage chiropractic care 	<ul style="list-style-type: none"> - Assumptions in chiropractic clinics presenting/aligning themselves to a perspective of vertebral subluxation if a clinic did not have a website/URL - Representations on the clinic website were the only way a clinic was studied - Authors are not experts in the chiropractic field
<p>2011 Villaneuva-Russell</p> <p>Against</p>	<ul style="list-style-type: none"> - Expresses how the chiropractic profession struggles to construct a singular image of its identity and scope - External pressures create a need to remain financially viable while accommodating science - Efforts to construct professional identity were made difficult because of power struggles between interprofessional segments - It would be beneficial to the profession to allow everyday chiropractors meaningful participation in the discourse over professional identity and cultural authority - EBM has not been able to validate the philosophical orientation of subluxation-based chiropractors whose views are in the existence of subluxation and innate intelligence 	<ul style="list-style-type: none"> - No limitations were stated by the author - Single author publication
<p>2020 Nim et al.</p> <p>Against</p>	<ul style="list-style-type: none"> - Observes that two factions exist in the chiropractic profession, which disagree on basic but central principles - conservative and evidence-based - Results showed that students had 'inappropriate' beliefs about spinal adjustments with 68% accepting that spinal adjustments can help the body function at 100% of its capacity - The clinical 'appropriateness' appears to improve with increasing academic year of study in regards to grasping management of cases - At least a third of Danish course cohort adhere to at least some of the original chiropractic philosophy - The association between conservatism and the ability to make appropriate clinical judgements did not reach statistical significance in this study 	<ul style="list-style-type: none"> - States that the data collected for the chosen cohorts is not indicative of development over time - Results were compared to other chiropractic institutions but could have included similar health care professions
<p>2018 Goncalves et al.</p> <p>Against</p>	<ul style="list-style-type: none"> - States some chiropractors have adopted the 'dental model' in their practice, proposing to prevent spinal problems through treatment of spinal subluxations before symptoms arise - Challenges the subluxation model by summarising the current models and stating their flaws in validity - Suggests that for chiropractors, prevention of disease through chiropractic treatment makes perfect sense, yet literature seems to be void of credibility - To maintain credibility the chiropractic profession needs to do further research into the prevention of disease - Concludes that no evidence seems credible enough to claim adjusting chiropractic subluxations as primary prevention and that chiropractors need to assume responsibility for emerging new evidence to support claims or cease claims 	<ul style="list-style-type: none"> - No limitations were stated by the authors