

Prevalence of chiropractic-specific terminology on chiropractors' websites in the United Kingdom with comparison to Australia: An analysis of samples

Abstract

Objectives

The purpose of this study was to compare the prevalence of 5 chiropractic-specific terms on United Kingdom chiropractic websites to findings in a previous study in Australia and to provide an argument against the use of these terms.

Methods

We searched websites belonging to chiropractors registered with the General Chiropractic Council for 5 terms: subluxation, vital (-ism/-istic), wellness, adjust (-ing/-ment) and Innate (Intelligence). Of 3239 chiropractors, 326 were sampled. Each page was searched and terms were counted only if used in a chiropractic-specific context. Term occurrence and frequency were recorded. The data were analysed using a single sample chi-square goodness-of-fit test for unequal proportions. The results were compared to our prior Australian study, using the chi-square test of homogeneity to determine the differences between both samples.

Results

At least 1 of the 5 chiropractic-specific terms was found on 245(75%) of UK websites. Adjust(-ing/-ment) was found on 222(68%) of UK websites compared to 283(77%) in Australia; wellness: 67(5%) UK compared to 199(33%) Australia; vital(-ism/-istic) 30(9%) UK, compared to 71(19%) Australia; subluxation 17(5%) UK compared to 104(28%) Australia; Innate 10(3%) UK compared to 39(11%) Australia. A chi-square test found that the terms were not equally distributed in the UK and Australian populations, $\chi^2(4) = 404.080$, $p < .001$. In our discussion, we argue why we feel that chiropractic specific terms should be abandoned and that standard biomedical terms should be used.

Conclusions

In the sample of websites we evaluated in this study, the majority in the UK used the 5 chiropractic-specific terms that we searched for. Comparitively the terms were used less frequently when compared to websites in Australia but were in a similar order of prevalence.

Introduction

Early in the development of the chiropractic profession, practitioners created words, phrases, and word usage to express traditional chiropractic-specific theories and concepts that were unique from mainstream health care. These theories and words are still used by some chiropractors. [1] [2] [3] Maintaining a unique lexicon reinforced that chiropractic was separate and distinct from other health care professions. [4]

However, retaining a separate lexicon may be disadvantageous as it could confuse public perception of chiropractic [5] [6] [7] [8] and may interfere with referrals both to and from other health care professionals. [9] [10] [11] [12] [13] Common language is suggested to be important because 1) patients may find it difficult to interpret health care literature, 2) health care professionals may struggle to understand each other, and 3) absence of standard definitions makes comparison of research studies challenging. [14] It has been proposed that semantic incompatibilities have hampered intraprofessional development of chiropractic and there are calls for the abandonment of traditional, uniquely chiropractic language. [15] [16]

Documenting the prevalence of chiropractic-specific terms may provide information to reduce barriers to efficient health care communication. We hypothesize that if chiropractors use terms in ways that only other chiropractors understand, this may discourage other health care professionals from interacting with chiropractors, such as through referrals or research projects. The chiropractic profession could possibly benefit from working with more university-based health researchers, who may be more willing to work with people who use a common lexicon, and avoid terms that may be perceived by some as pseudoscientific or antiscientific. [17] A study in 2020 found that 85% of Australian chiropractic websites included chiropractic-specific terms. [18] However, other regions have not been evaluated in a similar manner. Therefore, the purpose of this study was to compare the prevalence of the same 5 chiropractic-specific terms on chiropractors' websites in the UK and to those found in the study done in Australia.

Methods

All the documents used for this study were publicly available and therefore approval through the Murdoch University Human Research Ethics Committee was deemed unnecessary.

The methods used in the current study were replicated from a prior study (17) In summary, the following terms were used in this study.

Subluxation

In chiropractic lexicon, the term subluxation may mean a structural misalignment or musculoskeletal dysfunction, such as a displaced axis of motion affecting the function of a joint and associated structures. [19] [20] In mainstream medical terminology, the word subluxation denotes a partial dislocation, that may include damage to soft tissues, articular cartilage, or bone. [21]

Adjust (-ing/-ment)

The use of a chiropractic-specific meaning of adjust originates with DD Palmer. “The science of chiropractic has led to the creation of the art of vertebral adjusting.” [22] The term is applied by chiropractors in a similar way that medical doctors or other health providers use the term mobilization or manipulation, which is to manually induce motion into joints.

Vital(-ism/-istic)

There are multiple definitions of vitalism, which may include concepts of a life- or health-giving force. One view of vitalism includes “that the world functions more like an organism than a machine, having self-organizing and evolutionary qualities; that the whole is something new created by the interaction of its parts; and that reality is not confined to the physical.” [89] Although other professions may use the term vitalism, some chiropractors who use of this term may use it to place chiropractic as an alternative form of health care compared to medicine.

Wellness

Although “wellness” is not a chiropractic-specific term, some chiropractors may use wellness to address public health functions, such as promoting healthy behaviours [23] [24] (eg, smoking cessation, reduction of alcohol consumption), others may use it to imply chiropractic-specific benefits theorised to derive from regular chiropractic adjustments of chiropractic vertebral subluxations. [25] [26] [27]

Innate Intelligence

This term was promoted by DD and BJ Palmer during the early development of chiropractic to mean the intelligence that one is born with that runs the vital functions of the body as long as its impulses are not interfered with. [28] However, the meaning has been modified by some over time. [29] It is sometimes referred to by chiropractors as an energy or health-restoring force. [30] [31] [32] [33] [34]

Selection of sample websites

The 2018 General Chiropractic Council Register of Chiropractors in the United Kingdom listed 3239 registrants. [35] Using the Centers for Disease Control sample size calculator Epi Info [36] and an estimated 3239 chiropractors practising in the UK, a minimum sample of 316 was calculated to provide a 95% confidence interval with a 5% margin of error, using an expected frequency of 65%, meaning we estimated that 65% of inspected websites would contain at least one of the chiropractic terms. This number was estimated by the authors based on the results of the Australia study and the suspicion that the terms would be somewhat less prevalent in the UK. The list of registered chiropractors was alphabetically arranged and every tenth chiropractor in the registry was selected.

From 5 September 2019 to 25 October 2019, Internet search engine Google was used to find the website associated with each chiropractic practitioners name by searching for “chiro”+[name]. If no website existed for a chiropractor, the next name in the list was selected. The URL for the main web page was copied and pasted into a Microsoft Excel spreadsheet. The spreadsheet included columns for the name of the chiropractor, the URL of the website, and each of the chiropractic terms. Websites were word-searched using the find function (CTRL+F or COMMAND+F) on every available page for each of the five terms. No institutional or organisational websites were included, nor were social media sites.

As we had done previously [18], we checked if context had a chiropractic meaning for each use of a term. Terms were only counted if they were used in a positive or supportive way as we believe that when used this way they advocate chiropractic uniqueness or separateness. A hypothetical example of a positive meaning is: “We remove vertebral subluxations to enhance your health”. An example of a neutral or negative meaning is: “We view the subluxation concept as historical rather than clinically meaningful”. A statement indicating that chiropractic adjustments could directly enhance wellness would have been counted as it

implies a positive, chiropractic-specific meaning. However, the generic or unexplained use of a term would be considered neutral or negative, such as: “We believe that your wellness is enhanced when you experience less pain.”

As in the earlier paper [18], research assistants were trained in 2 meetings during which several random chiropractic clinic websites were accessed and the terms found therein discussed among the group, so all reached agreement on positive uses of terms to be recorded, and that negative or neutral uses of terms would not be recorded. If a website had both positively used terms and negative/neutral used terms, only the positively used ones were counted. The research assistants divided the names amongst themselves and searched for 4 of the terms. The chief investigator (KY) searched all the websites for the 5th term, (adjustment) and added the data to the shared spreadsheet. KY conducted spot checks on about 5% of websites for the other terms to ensure accuracy of the data collected by the research assistants.

Statistical Analysis

Excel tallied occurrences and determined percentages compared to the number of practising chiropractors. The chi-square goodness-of-fit was conducted to determine whether terms found in the inspected websites had the same proportion of occurrences compare to the Australian study. We had hypothesized a-priori that the terms’ proportion would be different in the UK compared to Australia but would follow a similar distribution to the one determine in Australia. (17) (Table 3) The chi-square goodness-of-fit test indicated that the five terms distribution was statistically significantly different to the distribution established in Australia ($\chi^2(4) = 528.506, p < 0.001$) with a determined minimum expected frequency of 75.2 for “Innate”.

A chi-square test of homogeneity was subsequently run to compare the results of this study to the results obtained from an Australian study. To determine where the differences in proportions lied among the different terms, a post hoc analysis involving pairwise comparisons using multiple z-test of two proportions with a Bonferroni correction was performed. A statistical significance was accepted at $p < 0.01$.) All data were analysed using SPSS 22.0 (IBM Corp, Armonk, NY, USA).

Results

Of the 326 UK websites sampled, 74% used at least 1 of the targeted terms. In both the UK and Australia, the number of occurrences was proportional per term, with adjust(-ing/-ment) the most commonly found, followed by wellness, subluxation, vital(-ism/-istic), and Innate. See Table 1 for the number of occurrences of each term.

[INSERT TABLE 1 ABOUT HERE]

The prevalence of chiropractors who use chiropractic-specific terminology is shown in Table 2.

[INSERT TABLE 2 ABOUT HERE]

A chi-square test of homogeneity was run to compare the results of this study to the results obtained from our Australian study.[18] Adequate sample size was established according to Cochran.[37] The 2 multinomial probability distributions were not equal in the population, $\chi^2(4) = 404.080$, $p < .001$. Observed frequencies and percentages of reported terms for each country are presented in Table 3. Post hoc analysis revealed that all pairwise comparisons were statistically significant.

[INSERT TABLE 3 ABOUT HERE]

Discussion

This is the first study of its kind, in that it is an analysis of chiropractic terminology on websites compared between world regions. Although the proportion of terms in the UK was significantly different from the proportion previously determined in Australia, the frequency of each term's utilisation was similar in both countries. The term “adjust” was the most commonly used term, followed by “wellness”, “subluxation”, “vital”, and “innate”; all terms being more frequently encountered in Australia. In particular, the terms were used more in Australia: subluxation was used 6 times more often, vital more than twice as often, and Innate 4 times more often than in the UK.

Reasons for the differences between regions are unknown and this study did not seek to find out why there were regional differences. We propose that there may be regional differences in how health and disease are communicated or there may be differences in regional advertising practices or advertising companies. There may also be a regional difference in the terminology based on what chiropractors were taught in their chiropractic educational programs.

In the UK, 222 (68%) of the sites we evaluated used adjustment, whereas 283 (77%) of Australian sites used the term “adjustment” rather than “manipulation.” One interpretation of this is that some chiropractors argue that a chiropractic adjustment is intended to be more specific than manipulation [38] [39] and/or may provide broad health effects, [40] and therefore is valued as a unique term. However, there appears to be little evidence of either specificity [41] [42] [43] [44] [45] [46] or unique effects for either term. [47] [48] [49] [50]

Some chiropractors use the term “wellness” to denote broad positive effects from manipulation or chiropractic care beyond pain relief. We propose that it is possible this term could be seen as contributing to chiropractors setting themselves apart from medical and other mainstream health care. Our opinion is that a different use of “chiropractic wellness” [51] compared to the public health perspective of wellness (eg, smoking cessation, moderation of alcohol consumption, disease prevention) might confuse the public.

It has been suggested that biomedical English had its own complex and esoteric lexicon with conventions on grammar, phraseology, and discourse that vary from those of general English. [52] Further, each sub-discipline in medicine has its own vocabulary. However in our argument, we draw a distinction between specialist terms, such as laminectomy or scalpel, and those that represent variances with the understanding of health and disease, as with the terms we selected for this study. In the first instance, mastery of the language of a sub-discipline represents attaining deeper understanding of a narrow area of health care. However, mastery of chiropractic terminology possibly represents an alternative approach to health care. There are varying alternative beliefs in students and practitioners in various countries and have been criticized by some. [53] [54] [55] [56] Chiropractic is not the only health profession with these internal struggles. Osteopathy and Chinese Medicine have a diversity of approaches and have their own internal disagreements on epistemology. [57] [58] Osteopathy continues to struggle with the persistence of historical paradigms of health care

[59] and issues of cultural identity and authority. [60] In homeopathy, divergent epistemology may have negatively affected its authority and public funding. [61] [62]

The Global Burden of Disease reported that back and neck pain have substantial impacts on quality of life and the economy. [63] [64] Chiropractors receive considerable training in both musculoskeletal and general diagnosis, including how to take vital signs, perform chest and abdominal exams, orthopaedic and neurological testing, and how to interpret diagnostic imaging and lab test results in order to determine appropriate diagnosis and patient management. [65] [66] Chiropractors are well-positioned to help address this global burden. The cost-effectiveness of using manual therapists in triage and treatment positions is being recognised in the UK, and the National Health Service has created a new position called First Contact Practitioner (FCP) for just this purpose. A primary care practice can employ chiropractors, but they will not receive central funding for an FCP post unless they employ a health professional on a defined list. [67]

Unique chiropractic terminology and concepts are points of attack for some chiropractic detractors, who generalize by claiming that all chiropractors are anti-scientific or cultists. [68] [69] [70] [71] [72] [73] This has been used to question the validity of complementary medicine altogether. [68] The presence of an alternative paradigm to the biomedical or orthodox medical understanding of health and disease may be divisive between some groups within chiropractic. [74] [75] [76] These issues may diminish the ability to generate authority due to the lack of scientific coherence in historical chiropractic theories. [77] Separate language that supports a paradigm of health alternative to that of mainstream biomedicine may reduce referrals from other health care professionals [9] and may be a source of conflict internally. [69] For example, a study found that Australian general medical practitioners had an unfavourable opinion of both osteopaths and chiropractors, although it is not clear if terminology was the cause. [78]

Students at different educational institutions within the same country may use different terminology. [79] We propose that different health care paradigms in education have the potential to foster division. Those who would like to be associated with scientific mainstream biomedical health care [80] [81] may be faced with challenges when others in the same profession are using historical terms. It has been suggested that there may be cognitive dissonance when a person tries to hold these 2 opposing views simultaneously. [82]

Use of profession unique language may impede research opportunities. It has been proposed that better agreement on diagnostic methods, treatment effects, and outcome measures might benefit patients as well as the profession of chiropractic. [83] Barriers to research in complementary and alternative medicine (CAM) include capacity and culture. [84] Capacity was defined to include access, competency, bias, incentives, and time. Culture included values and the complex system of CAM. Language or terminology would seem to fall within culture but was not examined as a discrete parameter in this study. It would be useful to investigate whether the use of chiropractic-specific language hinders the development of research.

Alternative epistemologies, the terminology that represents them, and the challenges they create have caused us to search for a solution. Some have suggested that the chiropractic profession should abandon historical terms and replace them with biomedical terminology for spine care. [77] [85] [86] We propose that by updating terminology, chiropractic could potentially improve its role in public health and health care. [87]

Our study adds to available information by comparing 5 chiropractic-specific terms used in a positive way as advertised on websites by practicing chiropractors in the UK compared to those websites in Australia. We achieved a representative sample, thus we propose that these results may be generalised to the chiropractors in the UK. In conjunction with the Australian study, these results provide a broader and international representation of uniquely chiropractic concepts as expressed through terminology used by chiropractors on their websites. Future research should explore the impact of chiropractic language on the public, policymakers, and other health care professionals. Additional research should include investigation into why chiropractors choose to use the terms that they do on their websites and if changing chiropractic terminology would impact the role of the profession in public health as well as health care in general.

Limitations

This study only compared 2 countries, so the results cannot be generalised to other countries, as those chiropractic communities may have different values or express their values differently. Limiting our search to 5 terms means that not all chiropractic-specific terms were assessed. Increased scrutiny of chiropractic advertising [88] may have led some chiropractors

to minimise their expression of chiropractic-specific terms during the study period, leading to possible underrepresentation. The randomness of the sample could have been improved by assigning all registered chiropractors a number and using a random number generator. There was bias in our sample, since chiropractors without a website were excluded.

We only counted terms that we interpreted to be “positive” uses of the terms and did not include the terms in any other context. Thus, we used our own subjective interpretation of the use of the terms, which might be interpreted differently by others. Other uses of the terms were not included in this study, which may result in different findings. Chronbach's alpha could have been used to establish agreement amongst the data extractors. Student researchers, even though trained, may have introduced error into the study through lack of experience with interpreting the context of the terms.

This paper expresses our opinions against using chiropractic specific terms that are grounded historically. Although there may be opposing arguments related to maintaining traditions or keeping to historic chiropractic terminology, our discussion did not consider if these terms may be beneficial.

Conclusions

In the sample of UK websites we evaluated in this study, a majority used the 5 chiropractic-specific terms that we searched for. Comparatively the terms were used less frequently when compared to websites in Australia but were in a similar order of prevalence.

FUNDING SOURCES AND CONFLICTS OF INTEREST

No funding sources or conflicts of interest were reported for this study.

References

1. Keating Jr JC. *Toward a Philosophy of the Science of Chiropractic: A Primer for Clinicians*. Stockton, CA: Stockton Foundation for Chiropractic Research, 1992.
2. Vernon H. Historical overview and update on subluxation theories. *Journal of Chiropractic Humanities* 2010;**17**(1):22-32 doi: 10.1016/j.echu.2010.07.001[published Online First: Epub Date]].
3. Budgell B. Subluxation and semantics: a corpus linguistics study. *Journal of the Canadian Chiropractic Association* 2016;**60**:190+
4. Strahinjevich B, Simpson JK. The schism in chiropractic through the eyes of a 1st year chiropractic student. *Chiropractic & manual therapies* 2018;**26**(1):2 doi: 10.1186/s12998-017-0171-x[published Online First: Epub Date]].
5. Cambron JA, Cramer GD, Winterstein J. Patient perceptions of chiropractic treatment for primary care disorders. *Journal of Manipulative & Physiological Therapeutics* 2007;**30**(1):11-16
6. Weeks WB, Goertz CM, Meeker WC, Marchiori DM. Public Perceptions of Doctors of Chiropractic: Results of a National Survey and Examination of Variation According to Respondents' Likelihood to Use Chiropractic, Experience With Chiropractic, and Chiropractic Supply in Local Health Care Markets. *J Manip Physiol Ther* 2015;**38**(8):533-44 doi: <https://doi.org/10.1016/j.jmpt.2015.08.001>[published Online First: Epub Date]].
7. Homola S. Placebos, nocebos, and chiropractic adjustments. *The Skeptical Inquirer*. Buffalo: The Committee for the Scientific Investigation of Claims of the Paranormal (SCICOP), 2003:35-38.
8. Hall H. *Chiropractic: A Little Physical Therapy, a Lot of Nonsense*. Skeptic. Altadena: Millennium Press, Inc., 2009:6-7,72.
9. Triano JJ, McGregor M. Core and Complementary Chiropractic: Lowering Barriers to Patient Utilization of Services. *Journal of Chiropractic Humanities* 2016;**23**(1):1-13 doi: 10.1016/j.echu.2016.07.001[published Online First: Epub Date]].
10. Branson RA. Hospital-Based Chiropractic Integration Within a Large Private Hospital System in Minnesota: A 10-Year Example. *J Manip Physiol Ther* 2009;**32**(9):740-48 doi: <https://doi.org/10.1016/j.jmpt.2009.10.014>[published Online First: Epub Date]].
11. Saks M. Inequalities, marginality and the professions. *Current Sociology* 2015;**63**(6):850-68 doi: 10.1177/0011392115587332[published Online First: Epub Date]].
12. Young KJ. Politics Ahead of Patients: The Battle between Medical and Chiropractic Professional Associations over the Inclusion of Chiropractic in the American Medicare System. *Canadian Bulletin of Medical History* 2019;**36**(2):381-412
13. Young KJ. A Tale of Specialization in 2 Professions: Comparing the Development of Radiology in Chiropractic and Medicine. *Journal of Chiropractic Humanities* 2019;**26**:3-18 doi: <https://doi.org/10.1016/j.echu.2019.09.001>[published Online First: Epub Date]].

14. Reid M, Barker Karen L, Lowe C. Divided by a lack of common language? - a qualitative study exploring the use of language by health professionals treating back pain. *BMC musculoskeletal disorders* 2009;**10**(1):123 doi: 10.1186/1471-2474-10-123[published Online First: Epub Date]].
15. Lawrence D. Toward a common Language. *Journal of Manipulative & Physiological Therapeutics* 1988;**11**(1):1-2
16. Bryner P. Isn't it time to abandon anachronistic terminology? *J Aust Chiropractor Assoc* 1987;**17**(2):53
17. Keating Jr JC. Chiropractic: science and antiscience and pseudoscience side by side. *Skeptical Inquirer* 1997;**21**(3):37-43
18. Young KJ. Words matter: the prevalence of chiropractic-specific terminology on Australian chiropractors' websites. *Chiropractic & manual therapies* 2020;**28**(1):18 doi: 10.1186/s12998-020-00306-9[published Online First: Epub Date]].
19. Rome PL. Usage of chiropractic terminology in the literature: 296 ways to say 'subluxation': complex issues of the vertebral subluxation. *Chiropractic Technique* 1996;**8**(2):49-60
20. Johnson C. Use of the term subluxation in publications during the formative years of the chiropractic profession. *Journal of chiropractic humanities* 2011;**18**(1):1-9 doi: 10.1016/j.echu.2011.10.004[published Online First: Epub Date]].
21. thefreedictionary.com. Subluxations and Dislocations. *The Free Dictionary - Medical Dictionary*, 2020.
22. Palmer BJ. *The Chiropractic Adjuster*. Davenport, Iowa: The Palmer School of Chiropractic, 1921.
23. Hawk C. The interrelationships of wellness, public health, and chiropractic. *Journal of Chiropractic Medicine* 2005;**4**(4):191-94 doi: [http://dx.doi.org/10.1016/S0899-3467\(07\)60150-5](http://dx.doi.org/10.1016/S0899-3467(07)60150-5)[published Online First: Epub Date]].
24. Redwood D, Globe G. Prevention and Health Promotion by Chiropractors. *American Journal of Lifestyle Medicine* 2008;**2**(6):537-45 doi: 10.1177/1559827608323214[published Online First: Epub Date]].
25. Gatterman M. The patient-centred paradigm: A model for chiropractic health promotion and wellness. *Chiropractic Journal of Australia* 2006;**36**(3):92-96
26. Taylor DN. A theoretical basis for maintenance spinal manipulative therapy for the chiropractic profession. *Journal of Chiropractic Humanities* 2011;**18**(1):74-85 doi: 10.1016/j.echu.2011.07.001[published Online First: Epub Date]].
27. Alcantara J, Whetten A, Ohm J, Alcantara J. Ratings of perceived effectiveness, patient satisfaction and adverse events experienced by wellness chiropractic patients in a practice-based research network. *Complementary Therapies in Clinical Practice* 2019;**36**:82-87 doi: <https://doi.org/10.1016/j.ctcp.2019.06.003>[published Online First: Epub Date]].
28. Palmer DD. *The Chiropractor's Adjuster: Textbook of the Science, Art and Philosophy of Chiropractic for Students and Practitioners*. Portland, Oregon: Portland Printing House Co, 1910.
29. Keating Jr JC. The Meanings of Innate. *Journal of the Canadian Chiropractic Association* 2002;**46**(4-10)
30. Tickel W. 'Something' you just can't get over. *Chiropractic Journal* 2003;**17**(4):40

31. Borio JDC. The primordial subluxation. *Chiropractic Journal* 2010;**24**(11):22
32. Gay TJ. Why are you where you are? *Chiropractic Journal* 2007;**21**(9):31
33. Mertz CJD. Birthing a new paradigm. *Chiropractic Journal* 2011;**26**(3):29
34. Kent C. Science and innate. *Chiropractic Journal* 2001;**15**(6):35
35. Council GC. Register of Chiropractors 2018, 2018.
36. Control CfD. Epi Info. Secondary Epi Info 2019. <https://www.cdc.gov/epiinfo/>.
37. Cochran WG. Some methods for strengthening the common X2 tests. *Biometrics* 1954;**10**(1):417-51
38. Cooperstein R, Rickard T, Claus C. Full-spine specific chiropractic technique. *Journal of the American Chiropractic Association* 2003;**40**(1):20
39. Sinnott R. Palmer Upper Cervical Specific - HIO (Hole-in-One). Secondary Palmer Upper Cervical Specific - HIO (Hole-in-One) 2014. <http://www.upcspine.com/PDF/HIO.pdf>.
40. Prescott D. Adjustment vs. manipulation. *Chiropractic Journal* 2001;**15**(10):40
41. Herzog W, Kats M, Symons B. The Effective Forces Transmitted by High-Speed, Low-Amplitude Thoracic Manipulation. *Spine* 2001;**26**(19):2105-10 doi: 10.1097/00007632-200110010-00012[published Online First: Epub Date]].
42. Triano JJ, Schultz AB. Loads transmitted during lumbosacral spinal manipulative therapy. *Spine* 1997;**22**(17):1955-64 doi: 10.1097/00007632-199709010-00003[published Online First: Epub Date]].
43. Perle S. The Illusion of specificity. *Journal of the American Chiropractic Association* 2002;**39**(4):30
44. Reggars JW, Pollard HP. Analysis of zygapophyseal joint cracking during chiropractic manipulation. *J Manip Physiol Ther* 1995;**18**(2):65-71
45. Herzog W. The biomechanics of spinal manipulation. *Journal of Bodywork & Movement Therapies* 2010;**14**(3):280-86 doi: 10.1016/j.jbmt.2010.03.004[published Online First: Epub Date]].
46. Nim CG, Kawchuk GN, Schiøttz-Christensen B, O'Neill S. The effect on clinical outcomes when targeting spinal manipulation at stiffness or pain sensitivity: a randomized trial. *Scientific reports* 2020;**10**(1) doi: 10.1038/s41598-020-71557-y[published Online First: Epub Date]].
47. Mirtz TA, Morgan L, Wyatt LH, Greene L. An epidemiological examination of the subluxation construct using Hill's criteria of causation. *Chiropractic & Osteopathy* 2009;**17**(1):13 doi: 10.1186/1746-1340-17-13[published Online First: Epub Date]].
48. Haldeman S. Neurologic effects of the adjustment. *J Manip Physiol Ther* 2000;**23**(2):112-14 doi: 10.1016/S0161-4754(00)90078-2[published Online First: Epub Date]].
49. Bronfort G, Haas M, Evans RL, Leininger B, Triano JJ. Effectiveness of manual therapies: the UK evidence report. *Chiropractic and Osteopathy* 2010;**18**(3) doi: 10.1186/1746-1340-18-3[published Online First: Epub Date]].
50. Clar C, Tsertsvadze A, Court R, Hundt GL, Clarke A, Sutcliffe P. Clinical effectiveness of manual therapy for the management of musculoskeletal and non-musculoskeletal conditions: systematic review and update of UK evidence report. *Chiropractic & manual therapies* 2014;**22**:12

51. Evans M, Perle S, Ndetan H. Chiropractic wellness on the web: the content and quality of information related to wellness and primary prevention on the Internet. *Chiropractic & manual therapies* 2011;**19**(1) doi: 10.1186/2045-709X-19-4[published Online First: Epub Date]].
52. Budgell BS. The language of integrative medicine. *Journal of Integrative Medicine* 2013;**11**(3):229-32 doi: <https://doi.org/10.3736/jintegmed2013026>[published Online First: Epub Date]].
53. Innes SI, Leboeuf-Yde C, Walker BF. How frequent are non-evidence-based health care beliefs in chiropractic students and do they vary across the pre-professional educational years. *Chiropractic & manual therapies* 2018;**26**(1):8 doi: 10.1186/s12998-018-0178-y[published Online First: Epub Date]].
54. Kent C. Health benefits of chiropractic care for asymptomatic persons. *Chiropractic Journal* 2004;**18**(9):33
55. Pollentier A, Langworthy JM. The scope of chiropractic practice: A survey of chiropractors in the UK. *Clinical Chiropractic* 2007;**10**(3):147-55 doi: <http://dx.doi.org/10.1016/j.clch.2007.02.001>[published Online First: Epub Date]].
56. Gíslason HF, Salminen JK, Sandhaugen L, et al. The shape of chiropractic in Europe: a cross sectional survey of chiropractor's beliefs and practice. *Chiropractic & manual therapies* 2019;**27**(1):16 doi: 10.1186/s12998-019-0237-z[published Online First: Epub Date]].
57. Thomson OP, Petty NJ, Moore AP. Osteopaths' professional views, identities and conceptions – A qualitative grounded theory study. *International Journal of Osteopathic Medicine* 2014;**17**(3):146-59 doi: <https://doi.org/10.1016/j.ijosm.2013.12.002>[published Online First: Epub Date]].
58. Brosnan C. Epistemic cultures in complementary medicine: knowledge-making in university departments of osteopathy and Chinese medicine. *Health Sociology Review: Lived Experience, Contested Evidence: Sociological Perspectives On The Politics Of Knowledge In Healthcare* 2016;**25**(2):171-86 doi: 10.1080/14461242.2016.1171161[published Online First: Epub Date]].
59. Paulus S. The core principles of osteopathic philosophy. *International Journal of Osteopathic Medicine* 2013;**16**(1):11-16 doi: 10.1016/j.ijosm.2012.08.003[published Online First: Epub Date]].
60. Kasiri-Martino H, Bright P. Osteopathic educators' attitudes towards osteopathic principles and their application in clinical practice: A qualitative inquiry. *Manual Therapy* 2015;**21**:233-40 doi: 10.1016/j.math.2015.09.003[published Online First: Epub Date]].
61. Crawford L. Moral Legitimacy: The Struggle Of Homeopathy in the NHS. *Bioethics* 2016;**30**(2):85-95 doi: 10.1111/bioe.12227[published Online First: Epub Date]].
62. Steuter E. Contesting the rule(s) of medicine: Homeopathy's battle for legitimacy. *Journal of Canadian Studies* 2002;**37**(3):92
63. Fulco C, Liverman CT, Sox HC, Institute of Medicine (U.S.). Committee on Health Effects Associated with Exposures During the Gulf War. *Gulf War and health*. Washington, D.C.: National Academy Press, 2000.
64. Vos T, Allen C, Arora M, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet* 2016;**388**(10053):1545-602 doi: [http://dx.doi.org/10.1016/S0140-6736\(16\)31678-6](http://dx.doi.org/10.1016/S0140-6736(16)31678-6)[published Online First: Epub Date]].
65. World Health O. WHO guidelines on basic training and safety in chiropractic. Geneva: World Health Organization, 2005.

66. Council on Chiropractic Education Australasia. Accreditation Guidelines for Chiropractic Education Programs, 2018.
67. MSK Knowledge Hub. First Contact Physiotherapy posts in General Practice: A guide for implementation. Secondary First Contact Physiotherapy posts in General Practice: A guide for implementation 2020. <https://mskhub.org.uk/cross-cutting/first-contact-practitioner/>.
68. Costa M. Is Complementary Medicine a Valid Alternative? Australasian Science. Hawksburn: Control Publications Pty Ltd, 2013:44.
69. Ernst E. Chiropractic: a critical evaluation. *J Pain Symptom Manag* 2008;**35** doi: 10.1016/j.jpainsymman.2007.07.004[published Online First: Epub Date]].
70. Ernst E, Gilbey A. Chiropractic claims in the English-speaking world. *NZ Med J* 2010;**123**:36-44
71. Magner G. *Chiropractic The Victim's Perspective*: Amherst: Prometheus Books, 1995.
72. Taylor HD. Unit Plan for the AMA Committee on Quackery: American Medical Association Committee on Quackery, 1974.
73. Department of Investigation. Chiropractic: The Unscientific Cult. In: Association AM, ed. Chicago: American Medical Association, 1966.
74. Mirtz TA, Perle SM. The prevalence of the term subluxation in North American English-Language Doctor of chiropractic programs. *Chiropractic & manual therapies* 2011;**19**(1):14 doi: 10.1186/2045-709X-19-14[published Online First: Epub Date]].
75. Morgan L. Innate intelligence: Its origins and problems. *The Journal of the Canadian Chiropractic Association* 1998;**42**(1):35
76. Leboeuf-Yde C, Innes SI, Young KJ, Kawchuk GN, Hartvigsen J. Chiropractic, one big unhappy family: better together or apart? *Chiropractic & manual therapies* 2019;**27**(1):4 doi: 10.1186/s12998-018-0221-z[published Online First: Epub Date]].
77. Nelson CF, Lawrence DJ, Triano JJ, et al. Chiropractic as spine care: a model for the profession. *Chiropractic & Osteopathy* 2005;**13**(1):9 doi: 10.1186/1746-1340-13-9[published Online First: Epub Date]].
78. Engel RM, Beirman R, Grace S. An indication of current views of Australian general practitioners towards chiropractic and osteopathy: a cross-sectional study. *Chiropractic & manual therapies* 2016;**24**(1):37 doi: 10.1186/s12998-016-0119-6[published Online First: Epub Date]].
79. Gleberzon BJ, Pohlman KA, Russell E. Comparison of chiropractic student lexicon at two educational institutions: a cross-sectional survey. *Journal of the Canadian Chiropractic Association* 2019;**63**(1):36-44
80. Ernst E, Gilbey A. Chiropractic claims in the English-speaking world. *The New Zealand Medical Journal (Online)* 2010;**123**(1312):36-44
81. Edwards J. Who represents the mainstream of chiropractic? *Dynamic Chiropractic*. 25 March 2004 ed, 2004.
82. Gliedt JA, Hawk C, Anderson M, et al. Chiropractic identity, role and future: a survey of North American chiropractic students. *Chiropractic & manual therapies* 2015;**23**:4 doi: 10.1186/s12998-014-0048-1[published Online First: Epub Date]].
83. Johnson C. Comparative Effectiveness Research and the Chiropractic Profession. *J Manip Physiol Ther* 2010;**33**(4):243-50 doi: <https://doi.org/10.1016/j.jmpt.2010.04.001>[published Online First: Epub Date]].

84. Veziari Y, Leach MJ, Kumar S. Barriers to the conduct and application of research in complementary and alternative medicine: a systematic review. *BMC Complementary And Alternative Medicine* 2017;**17**(1):166 doi: 10.1186/s12906-017-1660-0[published Online First: Epub Date]].
85. French SD, Downie AS, Walker BF. Low back pain: a major global problem for which the chiropractic profession needs to take more care. *Chiropractic & manual therapies* 2018;**26**
86. Triano JJ, Goertz C, Weeks J, et al. Chiropractic in North America: Toward a Strategic Plan for Professional Renewal—Outcomes from the 2006 Chiropractic Strategic Planning Conference. *J Manip Physiol Ther* 2010;**33**(5):395-405 doi: <http://dx.doi.org/10.1016/j.jmpt.2010.05.002>[published Online First: Epub Date]].
87. Johnson C, Baird R, Dougherty PE, et al. Chiropractic and Public Health: Current State and Future Vision. *J Manip Physiol Ther* 2008;**31**(6):397-410 doi: <https://doi.org/10.1016/j.jmpt.2008.07.001>[published Online First: Epub Date]].
88. Professional Standards Authority for Health and Social Care. Performance Review 2019-20: General Chiropractic Council. London: Professional Standards Authority, 2020.
89. Hawk C. When worldviews collide: maintaining a vitalistic perspective in chiropractic in the postmodern era. *Journal of Chiropractic Humanities*. 2005 Jan 1;12:2-7.

Tables

Table 1: Total occurrences of each term on chiropractic websites in UK and Australia

Country	Adjust (-ing/-ment)	Wellness	Subluxation	Vital (-ism/-istic)	Innate (Intelligence)	Totals
UK	1578	183	68	38	12	1879
Australia	2249	872	489	158	137	3905

Legend: These numbers include multiple occurrences on websites.

Table 2: Number of websites with each term in UK and Australia, n (%)

Country	Adjust (-ing/-ment)	Wellness	Subluxation	Vital (-ism/-istic)	Innate (Intelligence)	Totals
UK	222(68%)	67(21%)	17(5%)	30(9%)	10(3%)	326
Australia	283(77%)	199(33%)	104(28%)	71(19%)	39(11%)	369

Legend: If a website mentioned a term any number of times, it was counted once for this table.

Table 3: Crosstabulation of country and total number of terms found

Terms	UK (%)	Australia (%)
-------	--------	---------------

Subluxation	68 (3.62)	489 (12.5)
Vital(-ism/istic)	38 (2.02)	158 (4.04)
Wellness	183 (9.74)	872 (22.33)
Innate	12 (0.64)	137 (3.5)
Adjust(-ing/-ment)	1578 (83.98)	2249 (57.60)