

CHIROPRACTIC CARE FOR INFANTS AND CHILDREN – THERE IS NO EVIDENCE FOR IT AND IT IS DANGEROUS? A SELECTIVE REVIEW OF THE LITERATURE AND COMMENTARY

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CHIROPRACTIC CARE FOR INFANTS AND CHILDREN – THERE IS NO EVIDENCE FOR IT AND IT IS DANGEROUS? A SELECTIVE REVIEW OF THE LITERATURE AND COMMENTARY

Abstract

Objective: Recent popular press commentary in Australia has raised concerns around the safety and evidence base for the chiropractic care of infants and children. This has led to statements such as “doctors speak out against chiropractors treating children” and “doctors at war with chiropractors over treatment of babies and children”. This selective review of the literature and commentary explores these issues.

Methods: Problems in assessing clinical interactions that involve a hands on approach with an objectivist quantitative methodology designed for a traditional western medical approaches (such as medication) versus a pragmatic constructivist methodology are discussed. Both PubMed and the Central Queensland University (CQU) Library database were searched using the terms “pediatric AND chiropractic”.

Results: The PubMed search returned 126 hits, and the CQU Library search returned 939 hits. A systematic review of the entire literature base is beyond the remit of this selective review and commentary, however, selected relevant literature is reviewed below.

Conclusion: The literature reviewed does not support the claim that the chiropractic care of children and infants has no evidence to support the practice, or the claim that chiropractic care of children and infants is dangerous. (Chiropr J Australia 2016;44:222-233)

Key Indexing Terms: Chiropractic; Pediatrics; Evidence-Based Clinical Practice

INTRODUCTION

Chiropractic care of infants and children has been reported as part of the profession since the early 1900s.(1) Material continues to be published in 2016 in mainstream media which calls this practice into question, as reported by Arnold on the Australian Broadcasting Commission (ABC) that “Doctors speak out against chiropractors treating children” and Medew in the Sydney Morning Herald (SMH) that “Doctors at war with chiropractors over treatment of babies and children.” (2,3) This confrontational approach is not new. In the USA, it took an antitrust lawsuit filed against the American Medical Association in 1976 to reveal the magnitude and scope of a decades long plan to contain and eliminate the chiropractic profession. This lawsuit was finalised in 1987, when United States District Judge Susan Getzendanner found the American Medical Association and its codefendants guilty of violating the Sherman Antitrust Act. (4) In her decision, Getzendanner asserted that “the AMA decided to contain and eliminate chiropractic as a profession” and that it was the AMA’s intent to “destroy a competitor”. (5)

In Australia today multiple medical practitioners “speak out against chiropractors treating children” and are claimed to be “at war with chiropractors over treatment of babies and children”. (2,3) The following is excerpt from the SMH April 28 2016:

"The head of paediatrics at Royal Darwin Hospital, Dr Paul Bauert, says he wants the regulators to ban chiropractic treatment for children altogether. 'AHPRA and the Chiropractic Board, should be banning any treatment of children and adolescents under the age of 16, 17, until the evidence is available that shows that there may be some effect,' Bauert says. 'The only evidence that's available at the moment, looking at all the published chiropractic literature, the conclusions of all of those studies say that chiropractors may compete with physiotherapists in terms of treating some back problems. But all their other claims are beyond belief, and can carry a range of significant risks.' The Royal Australian College of General Practitioners has told its members to not refer patients to chiropractors and is calling for the federal government and private health insurers to stop paying them for questionable treatments." (3)

The medical practitioners' comments lead to specific questions regarding evidence of effect and safety for the chiropractic care of infants and children. They also highlight one of the fundamental problems in assessing clinical interactions that involve a hands on approach with an objectivist quantitative methodology designed for a traditional western medical approaches such as medication. A pragmatic constructivist methodology would be more appropriate for this assessment. Lewith, Jonas, and Walach in their second edition 2011 text on Clinical Research in Complementary Therapies make several salient comments:

“we’ve seen substantial advances in how we think about complementary medicine; research funders are beginning to understand that the range of complementary and alternative medicines (CAM) on offer are not simply ‘alternative medications’ but in themselves complex whole systems of diagnosis and treatment. The mixed qualitative and quantitative research methods beginning to unravel this complex therapeutic interaction may not only allow us to understand how complementary medicines themselves may be offering benefit, but should also give us remarkable insights into the management (and self-management) of a variety of different chronic problems. We have begun to understand that simple placebo-controlled randomised controlled clinical trials offer us a very limited evidence base and that we need to expand our research methodology and its interpretation, taking into account a whole variety of different types of evidence so that we can begin to understand how best to manage illness within the community.” (6)

This fundamental difference in ontological perception may lead to significant cognitive dissonance. It commonly creates false perceptions with the resultant inaccurate appreciations of the nature of reality related to what is being studied. Roblyer and Doering effectively describe the key oppositional theories regarding ontology. (7) Objectivist theories assert that knowledge is absolute and mirrors reality, whereas constructivist theories postulate that knowledge is not absolute since an understanding of reality changes in the light of new experiences. (8)

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Issues appear to arise when objectivist quantitative measures are used to understand processes that are more accurately reflected in a pragmatic constructivist approach. This can be seen to be at odds with the general zeitgeist of the western world placing of the scientific process, and particularly the objectivist approach, on a pedestal. The scientific process is a tool of application for understanding the nature of reality as it pertains to whatever the object being studied. However, this is commonly confused as the end in itself - for example, something is given as true and accurate and real if it has been demonstrated objectively in scientific studies. This concept has been explored in depth by Sorell in his text on 'Scientism – philosophy and the infatuation with science'. (9) This is seen time and again in both the research literature and the popular press. (10)

The articles presented by the ABC and the SMH are evidence of this, whereby the quoted medical practitioners are decrying the lack of evidence as a general statement. They do not have their argument presented in an accurate nature to what they are commenting on - namely, objectivist research, preferably of a randomised controlled trial (RCT) nature, or a systematic review of said RCTs. This, in and of itself, is an issue as objectivist research does not capture the entirety of the clinical interaction between practitioner and patient. (6) RCT-style research is an effective approach to understand efficacy and effectiveness of a drug on a particular symptom/physiological marker within tightly controlled environments. This style of research has a place in a clinical setting relating to the chiropractic care of infants and children, but it falls far short of adequately describing the nature of the interaction between practitioner and patient. A pragmatic approach combining both qualitative and quantitative aspects leads to more accurate understandings of the interaction. This has a capability of better capturing the 'N of 1' - the clinical presentation of the patient, aspects of the patient and the practitioners sociodemographics that relate to their worldview/ontology, the patient/caregivers reported outcomes, and experiences of the interaction at each point along a continuum of care in a longitudinal sense.

The ABC and Sydney Morning Herald articles in Australia raised the questions of what is the evidence for the chiropractic care of infants and children. This commentary and selective review of the literature addresses the question of the evidence base and safety for the chiropractic care of infants and children.

DISCUSSION

Contextualising Chiropractic in Australia

The chiropractic profession was established in 1895 in the USA. (1) The first chiropractor in Australia, Barbara Brake, practiced in Melbourne in 1908. (11) Chiropractic legislation was first enacted in Australia in 1964. Chiropractors have been educated in the Australian university system for decades, and chiropractic is currently taught at RMIT University, Murdoch University, Macquarie University, and Central Queensland University (CQU). These all have government funding associated with them. The World Federation of Chiropractic currently reports 47 chiropractic programs around the globe. The World Health Organisation recognises the profession and published its guidelines in 2005 on educational standards for the profession.(12) The Australian Health Practitioner Regulation Agency (AHPRA) has 14 boards regulating health care practitioners including medical practitioners, dentists, pharmacists, and chiropractors.(13) The Chiropractic Board of Australia (CBA) reports as of December

2015 there are 5148 registered chiropractors in Australia.(14) The Chiropractic Association of Australia (CAA) is the largest national association with a 2015 membership of 3157. (15) The CAA has allocated significant funding to facilitate the Australian Chiropractic Research Network project led by Professor Adams and Professor Sibbritt. (16) These University of Technology Sydney professors have over 450 academic peer reviewed publications and over \$24 million in competitive funding grants between them. These factors contextualise the global nature of the profession and its long term place in the health care framework of the Australian population.

Methods

Selected research review - evidence and safety.

The next question pertains to research. The Head of Paediatrics at Darwin Hospital, Dr Bauert, was reported as stating 'the only evidence that's available at the moment, looking at all the published chiropractic literature, the conclusions of all of those studies say that chiropractors may compete with physiotherapists in terms of treating some back problems. But all their other claims are beyond belief, and can carry a range of significant risks.'. (2)

Posing this question in a simple PubMed search of "pediatric AND chiropractic" returns 126 hits, and a search of the CQU Library database for "paediatric AND chiropractic" returns 939 hits. A systematic review of the entire literature base is beyond the remit of this selective review and commentary; however, selected relevant literature is reviewed below.

Results

Two textbooks on the subject are currently in their second edition. Chiropractic Pediatrics, by Neil Davies, was published by Churchill Livingstone with the first edition in 2000 and the second edition from 2010. (17) This 414-page hardback text describes the thorough process of clinical chiropractic care of children, from intake, examination, recognising the seriously ill child, neurology, orthopaedics, relevant age related conditions, developmental disorders, nutrition, pain assessment, and specific chiropractic approaches to the paediatric patient. Pediatric Chiropractic, by Anrig and Plaughter, is likewise in its second edition from 2012. (18) It is a comprehensive resource that covers a wide range of information on pediatric chiropractic care. An international panel of 42 experts contributed to this book. Among the many topics covered are: care during pregnancy and the perinatal period, subluxation, clinical and radiological examination, child abuse, adolescent health, spinal trauma, scoliosis, pediatric nutrition, vaccination issues, and full spine and cranial adjustments. This reference carefully illustrates that the chiropractor is an appropriate provider of health care for children.

Core competencies of the certified pediatric doctor of chiropractic from a Delphi consensus process were published in 2016 in the *Journal of Evidenced Based Complementary and Alternative Medicine*.(19) The Delphi panel consisted of 23 specialists in chiropractic pediatrics from across the broad spectrum the chiropractic profession. Sixty-one percent of panelists had postgraduate paediatric certifications or degrees, 39% had additional graduate degrees, and 74% were faculty at a chiropractic

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institution and/or in a postgraduate paediatric program. The introduction to the competencies state that all doctors of chiropractic are adequately trained in basic paediatric skill and are licensed to examine, treat, and managed paediatric patients.

Hawk et al and Miller give a broad overview of current chiropractic the chiropractic care of infants and children. (20,21) Hawk quotes “according to Sackett, the “father” of evidence-based medicine, evidence based medicine is not restricted to randomised trials and meta-analysis. It involves tracking down the best external evidence with which to answer our clinical questions.” (19) They note that that chiropractic care, as a package of conservative approaches including manipulation, for pain management and/or promoting optimal function, has accumulated a substantial evidence base, primarily for musculoskeletal complaints. Best practices for the chiropractic care of children, first published in the *Journal of Manipulative and Physiologic Therapeutics* in 2009, was updated by Hawk et al in 2016. (20,22) Below is documented some of the significant evidence base supporting the chiropractic approach to care, from birth onwards.

Bronfort et al completed an effectiveness report of manual therapies with strict inclusion criteria of research to September 2009. (23) They identified 13 musculoskeletal conditions, 4 types of chronic headaches, and 9 non-musculoskeletal conditions. They identified 49 relevant systematic reviews, 16 evidence based guidelines and included an additional 46 RCTs not yet included in systematic reviews and guidelines. In children, the evidence was inconclusive regarding spinal manipulation for the effectiveness for otitis media, enuresis, and was not effective for infantile colic and asthma when compared to sham manipulation. Massage was found to have inconclusive evidence for children with asthma or infantile colic. In 2014 Clar et al completed an updated extension of Bronfort et al effectiveness report. (24) They found 178 new and additional studies to March 2013 (3.5 years after the cutoff date of Bronfort et al) of which 72 were systematic reviews, 96 were randomised controlled trial, and 10 were non-randomised primary studies. Evidence was identified for a large number of non-musculoskeletal conditions not previously considered. Of interest is the amending of the reporting for infantile colic from 2010 as moderate negative to 2014 of inconclusive favourable. A rapid growth in the body of evidence surrounding manual therapy over a 3.5-year time frame stand is apparent. This indicates further interest, investment and growth in developing the evidence base. It is noteworthy that these studies only accepted what the authors selected guidelines allowed - namely high quality randomised controlled trials and non-randomised primary studies. Clinical practice would grind to a halt if evidence-based practice was inaccurately applied as evidence-only practice - i.e. presentations may only be treated with interventions with RCT level evidence associating positive effect. This is not the reality of day-to-day clinical practice, and Sackett approached evidence based practice as tracking down the best external evidence with which to answer the clinical questions.

The updated “Best practices for chiropractic care of children” consensus paper by Hawk et al notes that the scientific evidence for the effectiveness and efficacy of chiropractic care and spinal manipulation for treatment of children is not plentiful or definitive. (22) Gotlib and Rupert completed systematic reviews of chiropractic manipulation in paediatric health conditions in 2005 and 2008. (25,26) The additional evidence found in the 2008 review showed the body of knowledge to entail 2 systematic reviews, 10 RCTs, 3 observational studies, 177 descriptive studies,

and 31 conference abstracts. Two years later, Ferrance and Miller discuss the chiropractic diagnosis and management of non-musculoskeletal conditions in children and adolescents. (27) Their commentary explores the presence of evidence for many of childhood conditions, but laments at its low level of quality and strength. They suggest chiropractors be bold in what they hypothesize but cautious and humble in what they claim, and that the conscientious and educated chiropractor, while working within their scope of practice, can potentially be a valuable member of the paediatric health care team. Gleberzon et al completed a systematic review of the literature surrounding the use of spinal manipulative therapy for paediatric health conditions. (28) This served as an update to 2 previous systematic reviews in 2005 and 2008 by Gotlib and Rupert. They note 16 clinical trials that met their inclusion criteria, with 6 investigating the effectiveness of spinal manipulative therapy (SMT) on colic, 2 each on asthma and enuresis, and 1 each on hip extension, otitis media, suboptimal breastfeeding, autism, idiopathic scoliosis, and jet lag. None investigated the effectiveness of SMT on spinal pain. They reported that the studies that monitored both subjective and objective outcome measures of relevance to both patients and parents tended to report the most favourable response to SMT, especially among children with asthma. However, many studies suffered from severe methodological limitations, and they clearly suggest more research in the area. What is noteworthy here is the number of quality research articles that acknowledges the chiropractic care of infants and children as an aspect of chiropractic practice. They demonstrate an evidence base to the practice of chiropractic for infants and children, and a rationale for application of chiropractic care to this population. Hawk et al state that chiropractic undergraduate education includes the study of the unique anatomy and physiology of the paediatric patient as well as the modification of evaluation and therapeutic procedures as it applies to this special population when addressing musculoskeletal problems and their effect on the overall health and well-being of the child. (22) As further context to the normality of conservative manual care for the newborn, the results of a US registered clinical trial were published in the *Journal of the American Osteopathic Association* in 2015 by Waddington et al. (29) Osteopaths in the USA hold licenses as general medical practitioners who also integrate a hands on musculoskeletal approach to patient care. They quote recent evidence suggesting osteopathic manipulative treatment may decrease complications and hospital length of stay; that such dysfunction may result from the external forces related to the birth process; but that its incidence is unknown. They summarised findings of 100 newborns aged between 6 and 72 hours and totaled a score of dysfunction relating to cranial motion, condylar motion, cervical motion, lumbar motion, and sacral motion. (29) Dysfunction in each of these areas was found in 80-99% of newborns. This score was positively associated with the duration of labour. This reinforces the appropriateness of trained practitioners in manual approaches to the neuro-musculoskeletal system assessing newborns.

A health practitioner in Australia is held to an approach to “do no harm,” where the balance of the positively potential outweighs the negative. Opinions expressed in the ABC and SMH articles would indicate that a significant level of harm or potential harm is associated with paediatric chiropractic; however, no evidence to support that opinion is given. This opinion is not supported by the evidence in the peer-reviewed literature, which is readily available and reviewed herein.

The most comprehensive review of the literature on adverse events due to chiropractic

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and other manual therapies for infants and children was published late 2014 by Todd et al. (30) This thorough review found 31 articles which met the inclusion criteria, with 12 articles reporting 15 serious adverse events - in the history of published peer reviewed literature relating to paediatric manual therapies. Three deaths occurred under the care of various providers (a physical therapist, an unknown provider, and a craniosacral therapist) and 12 serious injuries were reported. Their conclusion was the published cases of serious adverse events in this cohort are rare. The 3 deaths reported were associated with manual therapists; however, no deaths associated with chiropractic care were found in the literature to date. (30) They note that underlying preexisting pathology was associated with the majority of reported cases, that performing a thorough history and examination to exclude anatomical or neuralgic anomalies before applying any manual therapy may further reduce adverse events across all manual therapy professions. This point is reiterated in both Hawk et al's 2009 consensus article (20) on the chiropractic care of infants and children, and Hewitt et al's 2016 updated core competencies of the paediatric chiropractor. (19) The reviewed published chiropractic literature by Doyle in 2011 suggest a rate of .53% to 1% mild adverse events (AE) associated with chiropractic paediatric SMT. (31) A mild AE is irritability or soreness lasting less than 24 hours and resolving without the need for additional care beyond initial chiropractic recommendations. Put in terms of individual patients, between 1 in 100 to 200 patients presenting for chiropractic care, or in terms of patient visits, between 1 mild AE per 1310 visits to 1 per 1812 visits. For comparison, osteopathic paediatric SMT have reported a rate of 9%, and medical practitioners utilising paediatric SMT under the auspices of 'chiropractic therapy' have reported a rate of 6%. In 2013 the chiropractic profession published research that highlighted the importance of modifying force in infants compared to adult cases. (32)

If the concerns around safety of chiropractic care, and the chiropractic care of infants and children, are turned to usual medical care, and paediatric medical care, a number of concerning published findings arise. In the *Journal of the American Medical Association*, 2009, Kilo and Larson comment on the harmful effects of healthcare in the USA. (33) They state that "on balance, the data remains imprecise, and the benefits that US health care currently delivers may not outweigh the aggregate health harm it imparts. Health care contributes only about 10% toward reducing premature death; even a perfectly designed delivery system would prevent only a modest proportion of premature death."

A study published in 2015 by Marquet et al identified all patients with an unplanned need for a higher level of care during a 6-month period through 6 Belgium hospitals. (34) Adverse events were found in 56% of reviewed patient hospital records, of which 46% were highly preventable. This means 1 IN 4 unplanned transfers to a higher level of care were related to a highly preventable adverse event. The adverse events were mainly associated with drug therapy (25.6%), surgery (23.7%), diagnosis (12.4%), and systems issues (12.4%). The level of harm varied from temporary harm (55.7%) to long term or permanent impairment (19.1%) and death (25.2%). This means one quarter of these highly preventable adverse events resulted in death. A Canadian study by Matlow et al in 2012 reviewed the 3669 records of children admitted to 22 hospitals during the 12-month period. (35) The weighted rate of adverse events was 9.2%. The most responsible services for this were surgery (35.1%), and medicine (29.8%). Permanent disability occurred in 13 cases and death occurred in 4 patients, which equates to 1 death per 917 patients admitted.

It has been estimate by Wood et al in 2005 that adverse events occur in about 1% of children treated in hospital, and on average 60% of these events are preventable. (36) It is notable above that medications account for a significant component of adverse events. Szasz noted in 2001 that “in a pharmacracy, people are obsessed with medicine and perceive all manner of human problems as medical in nature and therefore amenable to medical remedies”. (37) Radlely et al noted 73% of off-label drug uses lacked evidence of clinical efficacy. (38) The greatest disparity between supported and unsupported off-label uses was found among prescriptions for psychiatric use (4% strong support vs 96% limited or no support) and allergies (11% strong support vs 89% limited or no support). Three fourths of the prescription drugs on the market do not have labelling indications for children, leaving their use in children to physicians discretion. (39) A systematic review of studies concerning the reasons for paediatric hospitalisation (children under the age of 19), which captured data from the USA, the UK, and Spain, showed the rate of paediatric hospitalisations due to adverse drug reactions was 2.09%. (40) 39.3% of these were life threatening.

A 11-year national analysis of paediatric adverse drug events (ADE) in the outpatient setting in the USA revealed a mean annual number of ADE-related visits of 585 922. (41) Children 0-4 years of age accounted for 43.2% of these visits. The most common symptom manifestation was dermatologic conditions (45.4%) and gastrointestinal symptoms (16.5%). The medication classes most frequently implicated in an ADE were antimicrobial agents (27.5%), central nervous system agents (6.5%), and hormones (6.1%). Miller and Zahn provided a national picture in 2000 of paediatric patient safety in hospitals, published in *Pediatrics* 2004, where they reviewed 5.7 million discharge records from 27 states in the USA of children under 19. (42) They reported 4483 deaths due to patient safety events. This equates to 1 death per 1300 visits. As noted previously, a child visiting a chiropractor has a one per 1300 visit risk of irritability or soreness lasting less than 24 hours (31), and no deaths associated with chiropractic care have been published in the literature to date. (29)

CONCLUSION

This selective review of the literature was conducted to examine the accuracy of claims reported in Australia in the popular press relating to chiropractic care of infants and children. These were specifically that there is no evidence to support the practice, and that it is dangerous. The reviewed literature reveals several important points. Aspects of medical care were reviewed to contextualize the relative risk of normal medical care relating to hospitalisation and medications, and particularly with respect to the paediatric age group. Adverse events were commonly reported related to this. The adverse event literature relating to the chiropractic care of infants and children reports the practice as a low-risk intervention. It highlights the importance of a thorough history and examination, an ability to refer when appropriate to minimize delayed diagnosis of medically treatable conditions, and age appropriate modification of technique. The review has documented a range of literature to underpin the evidence base for the chiropractic care of children and infants. This base is small, and it is noted that it has grown substantially over the past decade. Australian chiropractors are university educated and regulated under the Australian Health Practitioners Regulatory Authority along with 13 other health professions including medicine, nursing and midwifery, dentistry, and physiotherapy. (43) The literature reviewed does

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not support the claims that the chiropractic care of children and infants has no evidence to support the practice, and that it is dangerous.

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