

What effect does chiropractic treatment have on gastrointestinal (GI) disorders: a narrative review of the literature

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The purpose of this study was to provide a narrative review of the literature of studies describing the management of disorders of the gastro-intestinal (GI) tract using 'chiropractic therapy' broadly defined here as spinal manipulation therapy, mobilizations, soft tissue therapy, modalities and stretches. Search limiters include access to full text studies published between 1980 and November 2012 in peer-reviewed journals, English language only involving human subjects. Twenty-one articles were found that met our inclusion criteria. Retrievable articles varied from case reports to clinical trials to review articles of management options. The majority of articles chronicling patient experiences under chiropractic care reported they demonstrated mild to moderate improvements in presenting symptoms. No adverse side effects were reported. This suggests chiropractic care can be considered as an adjunctive therapy for patients with various GI conditions providing there are no co-morbidities.

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KEY WORDS: gastro-intestinal, therapy, manipulation, chiropractic

L'objectif de cette étude était d'offrir un examen narratif des documents d'études décrivant la gestion de troubles du tractus gastro-intestinal (GI) à l'aide d'un traitement chiropratique ici au sens large, comme la manipulation vertébrale, les mobilisations, le traitement des tissus mous, les modalités et les étirements. Les limites de la recherche comprennent l'accès aux textes d'étude complets entre 1980 et novembre 2012 dans les journaux révisés par des pairs en anglais concernant des sujets humains. Vingt et un articles correspondant à nos critères d'inclusion ont été trouvés. Les articles consultables vont des exposés de cas et essais cliniques aux articles de revues sur les options de gestion. La majorité des articles rapportant des expériences de patients de soins chiropratiques indiquent qu'ils ont connu une amélioration légère à moyenne des symptômes présentés. Aucune réaction indésirable n'a été signalée, ce qui laisse entendre qu'on peut considérer les soins chiropratiques comme un traitement auxiliaire pour plusieurs maladies gastro-intestinales en absence de comorbidité.

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MOTS CLÉS : gastro-intestinal, traitement, manipulation, chiropratique

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Introduction

The purpose of this paper was to conduct a narrative review of the literature that investigated the effectiveness of chiropractic treatment for gastrointestinal (GI) disorders. A previous review by Gleberzon et al¹ reviewed the literature from 2007 to 2011 that investigated the use of one type of chiropractic treatment (spinal manipulative therapy) for pediatric health conditions one of which was colic, often considered a type of GI condition effecting infants [Authors' note: there is considerable debate whether or not 'infantile colic' is a GI condition, or simply 'baby back pain' and there is debate if the method used to monitor its existence (crying time) is a subjective or objective outcome measure.¹ That debate notwithstanding, for the purposes of this report, we have included colic as a GI condition].

To the best of our knowledge, there has not been a narrative review done specifically on the topic of chiropractic treatment and GI disorders, nor has there been a systematic review that has examined chiropractic treatment of gastrointestinal disorders spanning the broad population. One advantage of a narrative review is that it enables practitioners to learn about the effect a wide variety of treatment options have (or do not have) on a condition or group of conditions- in this case GI disorders- published in various article formats, ranging from well designed clinical trials to commentaries. By contrast, systematic reviews typically exclude by design case reports, expert opinions or other source material often referred to as 'grey literature'.

There is a significant worldwide prevalence of functional gastrointestinal disorders, including irritable bowel syndrome (IBS) and chronic constipation. IBS is the most common functional bowel disorder and has a prevalence of 5–25%. Chronic constipation is a common condition with a prevalence rate in the range 1.2–27%.² Gastro-esophageal reflux disease (GERD) is a common chronic condition in which gastric contents reflux from the stomach into the esophagus, causing heartburn and other manifestations. The prevalence of GERD has been increasing worldwide, possibly due to factors such as increasing longevity, rising obesity rates, and more widespread use of medications that affect the lower esophageal sphincter.² About 7–10% of individuals in the United States experience heartburn daily, and 25–40% experience symptomatic GERD at some point during their lifetime.³

However, since many affected persons control the signs and symptoms of GERD with the use of over-the-counter medications, the condition is likely underreported.⁴ Although GERD usually affects individuals over the age of 40 years, it can develop in individuals of any age. GERD is equally common in men and women, although men are more likely to develop complications.⁴ In general, it is important to successfully manage patients GI symptoms, not only for the pain and discomfort but studies have shown patients with uncontrolled symptoms such as heartburn have a substantially impaired self-reported quality of life.⁵

Methods and Procedures

For this study "chiropractic treatment" was defined as therapy provided by a licensed chiropractor involving any combination of spinal manipulation therapy (SMT), soft tissue therapy (STT), modalities, stretching and mobilizations. "GI disorders" have been used as an umbrella term, encompassing infantile colic, constipation, GERD, inflammatory bowel disease, and colitis. Search limiters included; access to full text, review studies published in peer-reviewed indexed journals; English language; human subjects and; citations published between 1980 and November 2012. Further, there is no limit to our population of interest since gastrointestinal disorders target individuals of all ages.

The following databases were searched: Index to Chiropractic Literature, CINAHL and MEDLINE, with no date restriction up until November 2012 (English only). Index to Chiropractic Literature was searched by using the heading of "Chiropract*" or "Chiropract* treatment." Results were individually combined with the text words colic, gastro-esophageal reflux disease, inflammatory bowel disease, constipation and colitis and searched with 'AND'. Both CINAHL and MEDLINE were searched through Ebscohost. For MEDLINE we used the following MeSH terms: Chiropractic, Manipulation-Spinal, Gastrointestinal Diseases, Gastroesophageal Reflux, Colic, Inflammatory Bowel Diseases, Constipation and Colitis. Key words searched included, "Chiropract* treatment," "Chiropract*," and "Gastrointest*." For CINAHL we followed the same search strategy that we used for MEDLINE. The entire search strategy gave us numerous citations. Citations were eliminated if they did not meet the inclusion criteria, were duplicate discussions of the same study, or were not peer-reviewed articles from an in-

dexed journal. After the search parameters were applied, 19 relevant citations were collected.

We then performed reference tracking, whereby we consulted the references from our 19 previously collected articles. We managed to find an additional 2 articles that met our search criteria, giving us a total of 21 citations for review.

Inclusion Criteria

We selected to review only those studies involving human subjects of all ages. Only those articles written in English were included in this review, which may have limited the cultural and geographic diversity of our paper. Lastly, in order to be included in our review, a description of the chiropractic treatment rendered and descriptions of the outcome measures used must have been clearly stated.

Exclusion Criteria

All papers that were not written in English were excluded. Moreover, papers that did not clearly state what intervention was used and what outcome measures were used to monitor patient progress were excluded. The two authors (KA and SA) who were responsible for article retrieval had to agree that an article should be included or excluded based on the aforementioned criteria. If they could not agree, the third author (BJG) made a final decision with respect to article inclusion or exclusion.

After sorting the citations into these headings, they were further divided into subheadings based on the type of study conducted (Randomized Control Trials, case studies, case reviews etc.). Some headings had low study numbers and therefore some headings are collapsed in certain sections. Where possible, articles were ordered chronologically.

Results:

A) GERD

a. Preliminary Randomized Clinical Trial study

i. Hains G, Hains F, Descarreaux M. Gastroesophageal reflux disease, spinal manipulative therapy and ischemic compression: a preliminary study. *J Am Chiropr Assoc.* 2007;44(1):7-19.⁶ This preliminary randomized clinical trial examined the effects of chiropractic treatment on GERD symptoms in adults. Sixty-two adult subjects currently experiencing GERD symptoms were used in

the study. The subjects were divided into 2 groups, one group receiving SMT and ischemic compression; the other was randomly subdivided into either only receiving SMT or ischemic compression. The authors concluded that both SMT and ischemic compression are effective treatments for patients experiencing GERD symptoms. SMT and IC together were effective treatments for GERD symptoms; however, IC alone is more effective than SMT alone.

b. Prospective cohort study

i. Clinical roundup: how do you treat gastroesophageal reflux disease in your practice? *Alternative & Complementary Therapies.* 2009;15(1):31-38.⁷

The purpose of this study was to determine whether spinal manipulation provided any therapeutic effect on functional disorders of the upper gastrointestinal (GI) tract. A prospecting cohort study was conducted using a convenience sample of 83 consecutive patients with symptoms of dyspepsia for a minimum of 2 years. Treatment consisted of chiropractic SMT as well as soft tissue modalities. Results found that severity and frequency of GERD symptoms decreased without any adverse events. Intervention was most effective in patients with proven endoscopy-negative GERD.

c. Case Report

i. Fedorchuk C, St Bernard A. Case study – Improvement in gastro esophageal reflux disease following chiropractic care and the ALCAT procedure. *Ann Vert Sub Res.* 2011;(2):Online access only p 44-50.⁸

This case report examined the effects of chiropractic care on a 42-year-old female with chronic back pain and gastroesophageal reflux disease. The patient was adjusted using diversified full spine in combination with chiropractic biophysics (CBP) mirror image adjustment and traction. Results found that after 1 year of treatment symptoms resolved but returned within 5 months after stopping treatment. She began an Antigen Leukocyte Cellular Antibody test (ALCAT) diet, and 6 months after she was symptom free again. The SF-36 self reported quality of life survey indicated a 56% improvement from when treatment began 3 years prior. The authors concluded that CBP technique and the ALCAT diet was successful in treating thoracic subluxations associated with GERD.

Table 1: GERD

Reference	Objective	Trial Design	Number of Subjects	Intervention	Outcome Measures
Hains G, Hains F, Descarreaux M. Gastroesophageal reflux disease, spinal manipulative therapy and ischemic compression: a preliminary study. <i>J Am Chiropr Assoc.</i> 2007;44(1):7-19.	To determine the effects of chiropractic treatment on GERD symptoms in adults	<i>Preliminary randomized clinical trial</i>	62	One group receiving SMT and ischemic compression; the other was randomly subdivided into either only receiving SMT or ischemic compression	Changes in GERD symptoms were reported by patients using 2 questionnaires; one recorded the patient's symptoms and the other the patient's perceived impact of symptoms on social activities.
Clinical roundup: how do you treat gastroesophageal reflux disease in your practice? <i>Alternative & Complementary Therapies.</i> 2009; 15(1):31-38.	To determine whether spinal manipulation provided any therapeutic effect on functional disorders of the upper gastrointestinal (GI) tract	<i>A prospected cohort study</i>	83	Chiropractic SMT and soft tissue modalities	Severity and frequency of their GERD symptoms
Fedorchuk C, St Bernard A. Case study, Improvement in gastro esophageal reflux disease following chiropractic care and the ALCAT procedure. <i>Ann Vert Sub Res.</i> 2011; (2):Online access only p 44-50.	To determine the effects of chiropractic care on a patient with chronic back pain and gastroesophageal reflux disease	<i>Case report</i>	1	Diversified full spine adjustments in combination with CBP mirror image adjustment and traction	SF-36 self reported quality of life survey
Alcantara J, Anderson R. Chiropractic care of a pediatric patient with symptoms associated with gastroesophageal reflux disease, fuss-cry-irritability with sleep disorder syndrome and irritable infant syndrome of musculoskeletal origin. <i>J Can Chiropr Assoc.</i> 2008;52(4):248-55.	Unspecified	<i>Case report</i>	1	SMT (HVLA)	Assessment of symptoms
Wellhausen S. Nutrition and visceral manipulations a combined approach to GERD. <i>Nutritional Perspectives.</i> J Council on Nutrition. 2008;31(1):31-2, 34.	This article explored the different management options for GERD	<i>Review</i>	Unspecified	Comparison of drugs, surgical intervention, and nutritional and visceral manipulation	Assessment of symptoms
Jackson SB. Gastroesophageal reflux disease. <i>Topics in Clinical Chiropractic.</i> 1996;2(1):24-9.	Determine the pathophysiology, incidence and etiology, clinical findings, differential diagnosis, complications, conservative management and manual approaches of GERD	<i>Review</i>	Unspecified	Unspecified	Unspecified

ii. Alcantara J, Anderson R. Chiropractic care of a pediatric patient with symptoms associated with gastroesophageal reflux disease, fuss-cry-irritability with sleep disorder syndrome and irritable infant syndrome of musculoskeletal origin. *J Can Chiropr Assoc.* 2008; 52(4):248-55.⁹

3-month-old female patient presented with multiple symptoms of colic, plagiocephaly (flattening of subject's right occiput) and torticollis. The patient was previously diagnosed with GERD by her family phys-

ician. Diversified chiropractic SMT was used to treat her spinal dysfunctions. Craniosacral therapy was used to treat her cranial distortions of the right parietal and temporal bones and the temporomandibular joint (TMJ). Notable improvement occurred with each treatment and long-term follow up revealed full resolution of GERD, irritable baby and sleep disorder symptoms.

d. Review

i. Wellhausen S. Nutrition and visceral manipulations

a combined approach to GERD. *Nutritional Perspectives: J Council on Nutrition*; 2008;31(1):31-2, 34.¹⁰ This review discusses 4 different treatments for GERD: drugs, surgical intervention, nutritional supplementation and visceral manipulation. Acid neutralizers were recommended for temporary relief of GERD symptoms. There are three common surgical treatment options for GERD: Laparoscopic Nissen Fundoplication (MC), Stretta radiofrequency procedure, and EndoCinch. Since anatomy is constant and GERD is intermittent, it is a physiological and not anatomical problem. Results found that surgical change of the anatomy may improve the symptoms. GERD patients should avoid foods causing inflammation, irritation and spasm of the longitudinal esophageal muscles. The timing, quantity and quality of ingested food all have provocative factors.

Visceral manipulation can potentially improve the functioning of individual organs, the system of organs and the structural integrity of the entire body. Corrections of cervical and thoracic subluxations are essential and should be performed before the visceral manipulations to clear any somato-visceral negative feedback. Overall, the management of GERD requires a multimodal approach for the most successful results.

ii. Jackson SB. Gastroesophageal reflux disease. *Topics in Clinical Chiropractic*. 1995; 2(1):24-9.¹¹

This review paper discusses the pathophysiology, incidence and etiology, clinical findings, differential diagnosis, complications, conservative management and manual approaches of GERD. Conservative management of GERD involves three categories: mechanical, dietary and pharmacologic. Mechanical factors that lower intra-abdominal pressure should be applied. Dietary interventions that aid in tonifying the lower esophagus sphincter (LES) should be used. Over the counter drugs may also be an option for those with persistent symptoms. Lifestyle modification, mechanical activities and dietary considerations can all help to relieve GERD.

B) COLIC

a. Single blinded Randomized control trial

i. Browning M, Miller J. Comparison of the short term effect of chiropractic spinal manipulation and occipi-

to-sacral decompression in the treatment of infant colic: A single blinded, randomized, comparison trial. *Clinic Chiropr*. 2008;11(3):122-129.¹²

This study examined the effects of chiropractic treatment on infantile colic. 48 infant subjects were recruited and randomized into two groups. One group received SMT and the other occipit-sacral decompression. Results found that the mean hours of crying per day were significantly reduced in both groups and the mean hours of sleep per day were significantly increased in both groups. The authors concluded that both SMT and OSD appear to offer significant benefits to infants with colic.

ii. Olafsdottir E, Forshei S, Fluge G, Markestad T. Randomised controlled trial of infantile colic treated with chiropractic spinal manipulation. *Arch Dis Child*. 2001;84:138-141.¹³

This randomized controlled trial examined the efficacy of chiropractic spinal manipulation in the management of infantile colic. 86 infants were used in a randomized, blinded, placebo controlled clinical trial. The results showed that 32 of the 46 infants in the treatment group and 24 of the 40 in the control group showed some degree of improvement. The authors concluded that chiropractic spinal manipulation is no more effective than placebo in the treatment of infantile colic.

iii. Wiberg J, Nordsteen J, Nilsson N. The short-term effect of spinal manipulation in the treatment of infantile colic: a randomized controlled clinical trial with a blinded observer. *J Manip Physiol Ther*. 1999;22(8):517-522.¹⁴

This study examined the short-term effects of spinal manipulation for the treatment of infantile colic. Fifty colicky infants were recruited and randomly assigned to either the dimethicone treatment group or the spinal manipulation group. The authors concluded that spinal manipulation is effective in relieving infantile colic.

b. Longitudinal/Prospective Studies

i. Davies NJ, Jamison JR. Chiropractic management of irritable baby syndrome. *Chiropr J Austr*. 2007;37(1):25-9.¹⁵

This study is comprised of 3 chiropractic community-based clinics that specialize in the area of chiropractic pediatrics. A chiropractic adjustment was given to each subject based on detected subluxations.

Table 2: COLIC

Reference	Objective	Trial Design	Number of Subjects	Intervention	Outcome Measures
Browning M, Miller J. Comparison of the short term effect of chiropractic spinal manipulation and occipito-sacral decompression in the treatment of infant colic: A single blinded, randomized, comparison trial. <i>Clinic Chiropr.</i> 2008;11(3):122-129.	Comparison of the short term effect of chiropractic spinal manipulation and occipito-sacral decompression in the treatment of infant colic	<i>Single blinded Randomized control trial</i>	48	SMT and occiput-sacral decompression	Daily hours of crying of sleeping
Olafsdottir E, Forshei S, Fluge G, Markestad T. Randomised controlled trial of infantile colic treated with chiropractic spinal manipulation. <i>Arch Dis Child.</i> 2001;84:138-141.	Examination of the efficacy of chiropractic spinal manipulation in the management of infantile colic	<i>Single blinded Randomized control trial</i>	86	SMT and placebo adjustments	At each visit the parents described the effect of the last visit on a scale of five categories – “getting worse”, “no improvement”, “some improvement”, “marked improvement”, “completely well” – which were defined as the main outcome measure.
Wiberg J, Nordsteen J, Nilsson N. The short-term effect of spinal manipulation in the treatment of infantile colic: a randomized controlled clinical trial with a blinded observer. <i>J Manip Physiol Ther.</i> 1999;22(8):517-522.	Examined the short-term effects of spinal manipulation for the treatment of infantile colic	<i>Single blinded Randomized control trial</i>	50	SMT and dimethicone treatment	Unspecified
Davies NJ, Jamison JR. Chiropractic management of irritable baby syndrome. <i>Chiropr J Austr.</i> 2007; 37(1):25-9.	To determine if there is a relationship between chiropractic subluxations and irritable baby syndrome	<i>Longitudinal/ Prospective Studies</i>	3 Separate Clinics A. 30 B. 16 C. 5	A. Toggle Recoil, Logan Basic and respiratory assisted techniques B. Activator Technique C. Craniosacral	Unspecified
Klougart N, Nilsson N, Jacobsen J. Infantile colic treated by chiropractors: A prospective study of 316 cases. <i>J Manip Physiol Thera.</i> 1989;12(4): 281-288.	To describe the possible effect of spinal manipulation therapy on the course of infantile colic	<i>Longitudinal/ Prospective Studies</i>	316	SMT	The results were evaluated by analysis of a diary continuously kept by the mother and an assessment file comprised by interview
Hipperson A. Chiropractic management of infantile colic. <i>Clinical Chiropractic.</i> 2004; 7(4):180-186.	To examine the effects of chiropractic management of infantile colic	<i>Case series</i>	2	Diversified Chiropractic adjustments	Hours of sleep, vomiting and observation of colicky symptoms
Williams-Frey S. Management of atypical infant colic “A pain syndrome of infancy” and the emotional stress associated with it: Why treat a benign disorder? <i>Clin Chiropr.</i> 2011;14(3):91-96.	To examine the effects of chiropractic treatment on atypical infantile colic	<i>Case report</i>	1	Low force manipulative therapy in the cervical spine and low-pulsed impulses to the thoracic spine soft tissue stretching light touch cranial manipulative therapy	Resolution of symptoms
Wiberg K, Wiberg J. Retrospective study of chiropractic treatment of 276 Danish infants with infantile colic. <i>J Manip Physiol Ther.</i> 2010;33(7):536-541.	To examine the effects of chiropractic treatment of infants with infantile colic	<i>Retrospective Study</i>	276	SMT	Amount of crying time Any changes in crying
Kingston H. Effectiveness of chiropractic treatment for infantile colic. <i>Paediatric Nursing.</i> 2007;19(8):26.	To determine what evidence there is for chiropractic treatment of infantile colic and implications of this treatment	<i>Systems Review</i>	Unspecified	Unspecified	Unspecified

Clinic A favored the toggle recoil, Logan basic and respiratory-assisted techniques. Clinic B mostly used Activator technique and Clinic C used a craniosacral approach. Clinic A had 28/30 babies respond to treatment, Clinic B had 15/16 cases experience symptom relief and Clinic C had 4/5 cases resolved by the end of the study. The examiners found subluxations were present even when the babies symptoms had abated; therefore the link between chiropractic subluxations and symptoms of colic remain unproven. This study does not confirm or refute a cause and effect relationship between the chiropractic subluxation and irritable baby syndrome.

- ii. Klougart N, Nilsson N, Jacobsen J. Infantile colic treated by chiropractors: A prospective study of 316 cases. *J Manip Physiol Thera.* 1989;12(4):281-288.¹⁶

This prospective study attempted to describe the possible effect of spinal manipulation therapy on the course of infantile colic. Intervention consisted of spinal manipulative therapy to restricted articulations determined by the treating chiropractor; primarily in the upper cervical region. After 2 weeks of treatment 94% of patients had an improvement their symptoms; and at the 4 week follow up 97% of patients had improvement. This prospective study suggests that chiropractic manipulation for the treatment for infantile colic may be beneficial in most cases.

c. Case series

- i. Hipperson A. Chiropractic management of infantile colic. *Clinical Chiropractic.* 2004;7(4):180-186.¹⁷

This case series examined the effects of chiropractic management of infantile colic on 2 infants. In case 1, the infant received diversified chiropractic adjustments and 3 weeks after the initiation of chiropractic treatment the infant was sleeping 10 hours per night and was completely asymptomatic (frequency of treatment was unknown). In case 2, the infant received 6 treatments (diversified adjustments) over a 21-day period, after which the infant was also asymptomatic. The author concluded that there is a possible association between birth trauma, development of cranial and spinal segmental dysfunction and infantile colic.

d. Case report

- i. Williams-Frey S. Management of atypical infant colic

“A pain syndrome of infancy” and the emotional stress associated with it: Why treat a benign disorder? *Clin Chiropr.* 2011;14(3):91-96.¹⁸

This case report examined the effects of chiropractic treatment on atypical infantile colic. The subject of this study was a 16-week-old male infant and he was treated with low force manipulative therapy in the cervical spine as well as low-pulsed impulses to the thoracic spine. The author concluded that this case suggests a possible association between the development of cranial and spinal segmental dysfunction, muscular imbalance and consequential manifestation of symptoms of a pain syndrome in infancy.

e. Retrospective Study

- i. Wiberg K, Wiberg J. Retrospective study of chiropractic treatment of 276 Danish infants with infantile colic. *J Manip Physiol Ther.* 2010;33(7):536-541.¹⁹

This retrospective study examined the effects of chiropractic treatment of infants with infantile colic. The examination records of 749 infants from one Danish chiropractic practice were examined and 276 infants fulfilled the inclusion criteria of excessive crying spells of at least 3 hours per day. Besides chiropractic manipulation, the parents were given advice about carrying and handling their infant to avoid undue stress on the infant's spine. No apparent link between the clinical effect of chiropractic treatment and a natural decline in crying was found for this group of infants.

f. Systematic Reviews

- i. Kingston, H. Effectiveness of chiropractic treatment for infantile colic. *Paediatric Nursing.* 2007;19(8):26.²⁰

The purpose of this review was to determine what evidence there is for chiropractic treatment of infantile colic and implications of this treatment. No reports found spinal manipulation harmful to the baby or that it made symptoms worse. Wiberg et al (1999)¹⁴ conducted an RCT on infantile colic where SMT significantly reduced crying time compared to the medication group. Klougart et al (1989)¹⁶ studied 316 infants with colic and found that 94% of cases improved with SMT. Olafsdottir et al (2001)¹³ conducted a blinded study in which 100 colicky infants were assigned to either an SMT or control group. No significant difference between the two groups was found.

Table 3: COLITIS

Reference	Objective	Trial Design	Number of Subjects	Intervention	Outcome Measures
Blum CL. The resolution of chronic colitis with chiropractic care leading to increased fertility. J Vert Sublux Res (JVSR). 2003; Aug 31:5.	To examine the effects of chiropractic treatment on chronic colitis	Case Study	1	Sacro Occipital Technique including R+C factors utilizing orthopedic block placement and cervical stairstep procedures; occipital fiber analysis and treatment, bloodless surgery: chiropractic manipulative reflex technique (CMRT), and category one block placement and protocol	Symptom resolution

C) COLITIS

a. Case Study

- i. Blum CL. The resolution of chronic colitis with chiropractic care leading to increased fertility. J Vert Sublux Res (JVSR). 2003;Aug 31:5.²¹

This case study examined the effects of chiropractic treatment on chronic colitis. A 32-year-old female subject had been complaining of chronic colitis of 12 years duration. The patient was treated with the SOT method, occipital fiber evaluation and treatment, CMRT procedures for the colon, and category one protocol. The author concluded that it is difficult to extrapolate findings from one case result. However due to the prolonged nature of her inability to become pregnant the close proximity of her relief from colitis due to chiropractic care, further studies are indicated.

D) INFLAMMATORY BOWEL DISEASE

a. Descriptive study

- i. Burgmann T, Rawsthorne P, Bernstein CN. Predictors of alternative and complementary medicine use in inflammatory bowel disease: do measures of conventional health care utilization relate to use? Am J Gastroenterology. 2004;99(5):889-93.²²

This article investigated the relationship of complementary alternative medicine (CAM) alternatives used in the Canadian inflammatory bowel disease (IBD) population. The most popular CAM methods found in Canadian IBD were vitamins, herbals, diet, physical therapies (Chiropractic, massage, reflexology). With regards to demographics, no relationship between age, gender or disease diagnosis has been found; but an increase in CAM use has been found with increased disease duration. The most common symptoms being

Table 4: INFLAMMATORY BOWEL DISEASE

Reference	Objective	Trial Design	Number of Subjects	Intervention	Outcome Measures
Burgmann T, Rawsthorne P, Bernstein CN. Predictors of alternative and complementary medicine use in inflammatory bowel disease: do measures of conventional health care utilization relate to use? Am J Gastroenterology. 2004;99(5):889-93.	To determine the effect of CAM alternatives used in the Canadian inflammatory bowel disease (IBD) population	Descriptive Study	150	unspecified	Telephone survey and subjective reports

Table 5: CONSTIPATION

Reference	Objective	Trial Design	Number of Subjects	Intervention	Outcome Measures
Alacantara J, Mayer D. The successful chiropractic care of pediatric patients with chronic constipation: a case series and selective review of the literature. <i>Clinical Chiropractic</i> . 2008;11(3):138-47.	The successful outcome of chiropractic care in pediatric patients with chronic constipation	<i>Case series</i>	3	Full spine chiropractic (HVLA) and the activator technique	Self-reported bowel movement
Davis J, Alcantara J. Resolution of chronic constipation in a 7 year old male undergoing subluxation based chiropractic care: A case report. <i>J Pediatr Matern & Fam Health – Chiropr</i> . 2011;Fall (4):Online access only p 98-105.	To determine the effects of chiropractic care on a 7 year old male with headaches, neck pain and long-standing constipation	<i>Case report</i>	1	Gonstead technique	Patient's bowel movement as reported by his mother
Horley M. Resolution of chronic constipation and neck pain following chiropractic care in a 6-year-old female. <i>J Pediatr Matern & Fam Health – Chiropr</i> . 2010(2):51-55.	Determine the effects of chiropractic treatment on a child with constipation, vertebral subluxations and neck pain	<i>Case report</i>	1	High-velocity, low-amplitude (HVLA) adjustments at specific vertebral locations were administered at the areas of vertebral subluxation	Mother and patient reported bowel movement
Quist DM, Duray SM. Resolution of symptoms of chronic constipation in an 8-year-old male after chiropractic treatment. <i>J Manip Physiol Thera</i> . 2007;30(1):65-8.	To describe the history, treatment, and proposed explanation of a positive outcome in a patient with chronic constipation	<i>Case report</i>	1	Manipulation of the sacral area using diversified adjusting procedures and External massage of the abdomen	Self-reported bowel function

treated by EDP and CAM were pain/cramps, diarrhea, gas/bloating, blood in stool, decreased energy, stress, joint pains and constipation. Subjective reports found patients' undergoing EDP were provided symptom relief 95% of the time.

E) CONSTIPATION

a. Case Series

- i. Alacantara J, Mayer D. The successful chiropractic care of pediatric patients with chronic constipation: a case series and selective review of the literature. *Clinical Chiropractic*. 2008;11(3):138-47.²³

Case Report #1 – A 21-month old 15 kg male infant with complaints of constipation since birth. Treatment of HVLA thrust and activator technique was performed 3 times a week for 3 weeks and based on patient response abated to weekly visits. Care employed immediate response. Follow up 1 year later found consistent, soft, painless bowel movements.

Case Report #2 – A 7-month old female with constipation since age of 2 months. Chiropractic care consisting of activator adjustments to areas of subluxation were given 2x/week for 3 weeks. After the 3-week treatment and at the 1-year follow up, the infant continued to have normal and unstrained bowel movements.

Case Report #3 – A 21-month old female with encopresis and severe constipation since 10 months old. Chiropractic care using HVLA thrusts to the subluxated segments were made. This resulted in immediate bowel movements. By the end of her 3-month treatment plan (frequency unspecified) the child had normal healthy bowel movements.

b. Case Report

- i. Davis J, Alcantara J. Resolution of chronic constipation in a 7 year old male undergoing subluxation based chiropractic care: A case report. *J Pediatr Matern & Fam Health – Chiropr*. 2011;Fall(4):Online access only p 98-105.²⁴

This case report examined the effects of chiropractic care on a 7-year old male with headaches, neck pain and long-standing constipation. Chiropractic care was provided twice a week for 6 weeks, utilizing the Gonstead technique to the subluxations at C1, T2, and L5 was performed. Bowel relief was immediate after the first treatment. After 10 treatments, subject had almost daily natural bowel movements. The authors concluded that this case report provides supporting evidence that children with constipation may benefit from spinal adjustments to sites of vertebral subluxations.

- ii. Horley M. Resolution of chronic constipation and neck pain following chiropractic care in a 6-year-old female. *J Pediatr Matern & Fam Health – Chiropr.* 2010(2):51-55.²⁵

This case report study examined the effects of chiropractic treatment on a 6-year old child with constipation, vertebral subluxations and neck pain. The author concluded that chiropractic care was successful in increasing the frequency of bowel movement, and decreasing gastrointestinal and cervical pain in this 6-year-old patient.

- iii. Quist DM, Duray SM. Resolution of symptoms of chronic constipation in an 8-year-old male after chiropractic treatment. *J Manip Physiol Thera.* 2007;30(1):65-8.²⁶

Study involved an 8-year-old boy who underwent chiropractic treatment for his constipation. After the first chiropractic treatment the patient had almost daily, less painful bowel excretions. A follow up phone call 13 years after completion of care found the patient still having normal bowel function. This case report yielded immediate improvement of symptoms of chronic constipation with complete and permanent disappearance of symptoms after 1 month of treatments.

Discussion:

Twenty-one articles met the inclusion criteria of our study. Of these 21 studies, only 4 were randomized control trials; the other 17 were clinical trials of varying designs, case reports, case series or commentaries. With respect to safety, it appears that chiropractic treatment involving spinal manipulation therapy (SMT), soft tissue therapy (STT), modalities, stretching and mobilizations is safe to provide to individuals for treatment of GI disorders, provided there are no co-morbidities which would cause

contraindications. There were no studies that reported worsening of GI symptoms while receiving chiropractic treatment. Most studies reported patients experienced clinically meaningful improvements in their GI symptoms. Common trends show that chiropractic adjustments delivered using various chiropractic technique systems (Activator, Diversified, Thompson, Gonstead) resulted in improvements of GI symptoms. Other methods of treatment that reportedly improved patients' GI symptoms included soft tissue therapy (for example, ischemic compression), dietary changes and life style modifications.

Overall, the one randomized clinical trial (RCT) investigating the effects of diversified spinal manipulation therapy, ischemic compression and dietary alterations on patients with GERD reported significant improvement in symptoms. The use of visceral manipulations had equivocal findings.

There were two RCTs that examined chiropractic treatment for colic. Both found positive results with the use of diversified SMT and occiput-sacral decompression compared to controls. Spinal manipulation therapy was found to be significantly better at treating colic compared to over-the-counter medication. The Kingston review²⁰ was unable to confirm a relationship between chiropractic subluxations and colic symptoms; similarly, the Wiberg²² study determined that there was no link between chiropractic treatment and the management of colic.

Only one suitable study on colitis²¹ was found; hence it is unreasonable to extrapolate data from one case subject and infer it to a population. It was found that sacro-occipital technique had a positive effect on one subject's colitis²¹. Similarly, only one paper²² on inflammatory bowel disease was suitable to include in our review. That descriptive study reached the conclusion that exercise, diet and prayer were the most effective conservative methods to treat IBD.

Only case reports could be found surrounding the topic of chiropractic treatment for constipation²³⁻²⁶, all involving children. Studies that also had long-term follow-ups found that diversified, activator and Gonstead chiropractic techniques were beneficial in treating patient cases. Relative benefit of diet alterations, Thompson technique and abdominal massage were not reported. None of the case reports published found any negative findings for chiropractic treatment and constipation (that is, none reported a worsening of symptoms or adverse effects).

Limitations:

Most studies provided a thorough explanation of the type of chiropractic therapy used for patient care in terms of chiropractic technique system, frequency of sessions and duration of each intervention and location of the intervention (i.e. site of care); however other important details of treatment were often absent. Dietary modifications, soft tissue techniques and exercise routines were found to be effective for GI symptoms, but details of each therapy were often vague. Without being able to follow the study treatment plans employed, the usefulness of these papers in terms of reproducibility is questionable. With regards to over-the-counter medication treatments, the names and doses of the drugs were not included in some of the studies.

Although we performed reference tracking, we did not hand search all journals to identify articles that may have been missed by electronic searching, since that relies on the appropriate selection of keywords. In other words, it is possible we did not locate other articles that would have met our inclusion criteria due to the keyword used by the authors. Finally, as previously mentioned, non-English language articles were not included and therefore relevant studies might have been missed.

Conclusion:

The number and quality of research papers found for this narrative review were not high enough, and the studies that did exist were often not robust enough with respect to their design, in order to draw any concrete conclusions regarding the effectiveness of chiropractic treatment on gastrointestinal disorders. There were no reports of either worsening of symptoms or other adverse reactions by patients receiving various types of chiropractic therapy. Therefore, it would be fair to state that chiropractic therapy can be used as an adjunct to other forms of conventional treatment of GI disorders.

It is quite evident that there is a significant gap in the evidence base regarding chiropractic therapy for GI disorders, especially evidence coming from well-controlled clinical trials. Bearing that in mind, there is not currently any defensible treatment protocols or guideline that can be provided to practitioners to assist them in making reasonable choices with respect to chiropractic care planning decisions for patients with GI disorders.

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