

# A scoping review of chiropractic management of female patients with infertility

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**Background:** *Debate concerning chiropractic management of female infertility occurs largely in the absence of reference to the extant literature.*

**Methods:** *A scoping review was conducted of primary (original) data publications on the chiropractic management of female infertility based on searches of the Index to Chiropractic Literature and Pubmed, supplemented by papers from one author's archive.*

**Results:** *Ten articles, all case studies, met the review's inclusion criteria and documented the experiences of 11 women (mean age 31 years; mean period of infertility 3 years). Pregnancy occurred, on average, after 5 months of treatment with spinal manipulation and adjunctive modalities. No adverse events were reported.*

**Discussion:** *There are very few original data articles documenting responses of infertile females treated with spinal manipulation.*

**Conclusions:** *In the absence of a robust body of primary data literature, the use of spinal manipulation*

**Contexte :** *Les controverses au sujet de la prise en charge chiropratique de l'infertilité féminine sont en grande partie liées à l'absence de référence à la littérature existante.*

**Méthodologie :** *On a effectué une revue exploratoire de publications de données primaires (d'origine) sur la prise en charge chiropratique de l'infertilité féminine en consultant l'Index to Chiropractic Literature, Pubmed et divers documents provenant des archives d'un auteur.*

**Résultats :** *Dix articles, qui étaient tous les études de cas, satisfaisaient les critères d'inclusion de la revue. Ils visaient à documenter l'expérience vécue par 11 femmes (âge moyen : 31 ans; durée moyenne de l'infertilité : 3 ans). En moyenne, ces femmes sont devenues enceintes au bout de 5 mois de traitement par manipulations vertébrales et des modalités d'appoint. Aucun effet défavorable n'a été signalé.*

**Discussion :** *Il existe très peu d'articles documentant les réponses de femmes infertiles traitées par manipulations vertébrales.*

**Conclusions :** *En l'absence de corpus robuste de littérature sur des données primaires, il conviendrait*

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*in the management of female infertility should be approached with caution.*

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KEY WORDS: chiropractic, infertility, scoping review

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## Introduction

Female patients affected by infertility not uncommonly seek complementary and alternative (non-medical) treatment for their complaint.<sup>1-4</sup> One of the most popular forms of complementary and alternative care in western nations is chiropractic and there are a number of reports of successful pregnancies following institution of chiropractic care (for a review, see<sup>5</sup>).

Based on a substantially stronger body of literature, chiropractic care is generally recognized as one reasonable option in the management of biomechanical problems of the spine. Indeed, this is the ‘bread and butter’ of chiropractic, making up the overwhelming majority of cases managed by chiropractors.<sup>6-10</sup> On the other hand, chiropractic management of what may be thought of as visceral disorders does not enjoy such strong support inside or outside of the profession.<sup>11,12</sup> A report from a chiropractic practice-based research program published in 2001 revealed that only 1 of 4511 female patients surveyed presented with a chief complaint of infertility.<sup>13</sup> A large survey of the profession in the United States, published in 2005, showed that practitioners, on average, managed 0.6 cases of female infertility per year.<sup>8</sup> In fact, the preferred strategy of chiropractors was to refer the infertile patient to another health care practitioner or to co-manage the patient. In something of a contrast and depending upon the cohort of practitioners surveyed, a small<sup>14</sup> to sizeable<sup>10</sup> minority of chiropractors nonetheless believe that chiropractic care may be of benefit to some infertile female patients. It appears that patients who seek complementary and alternative care in general<sup>3,4,15</sup>, and chiropractic in particular, are wealthier and better educated than those who

*de faire preuve de prudence en ayant recours aux manipulations vertébrales dans la prise en charge de l’infertilité féminine.*

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MOTS - CLÉS : chiropratique, infertilité, revue exploratoire

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attend medical practitioners<sup>16</sup>. Otherwise, however, little is known about the distinguishing features of females who receive chiropractic care for infertility, or about the nature of the care which they receive.

Therefore, the purpose of the present review was to conduct a scoping review of the literature to determine the characteristics of female patients presenting for chiropractic care of infertility, and to characterize the treatments received and outcomes achieved. Furthermore, since spinal manipulation is the hallmark treatment of chiropractors<sup>8</sup>, but chiropractors may employ any number of adjunctive techniques, this review was limited to studies in which spinal manipulation was among the treatment techniques employed for each patient.

## Methods

A scoping review of the literature was conducted, using the framework of Levac *et al.*<sup>17</sup>, to identify and analyze the corpus of peer-reviewed, primary (original) data literature documenting the chiropractic management of the infertile female patient. To that end, a search of the Index to Chiropractic Literature (ICL) was performed (Figure 1) on November 11, 2016 using the search string “All Fields:gynecology OR All Fields:pregnancy OR All Fields:\*fertility, Peer Review only.” A search of PubMed conducted on April 25, 2017 using the search string “chiropractic [Title/Abstract} AND infertility [Title/Abstract] yielded no original data articles pertaining to chiropractic management of female infertility. Secondary references were identified from retrieved articles and supplemented from one of the authors’ archives. No language limitations were placed on the searches, but all of the arti-

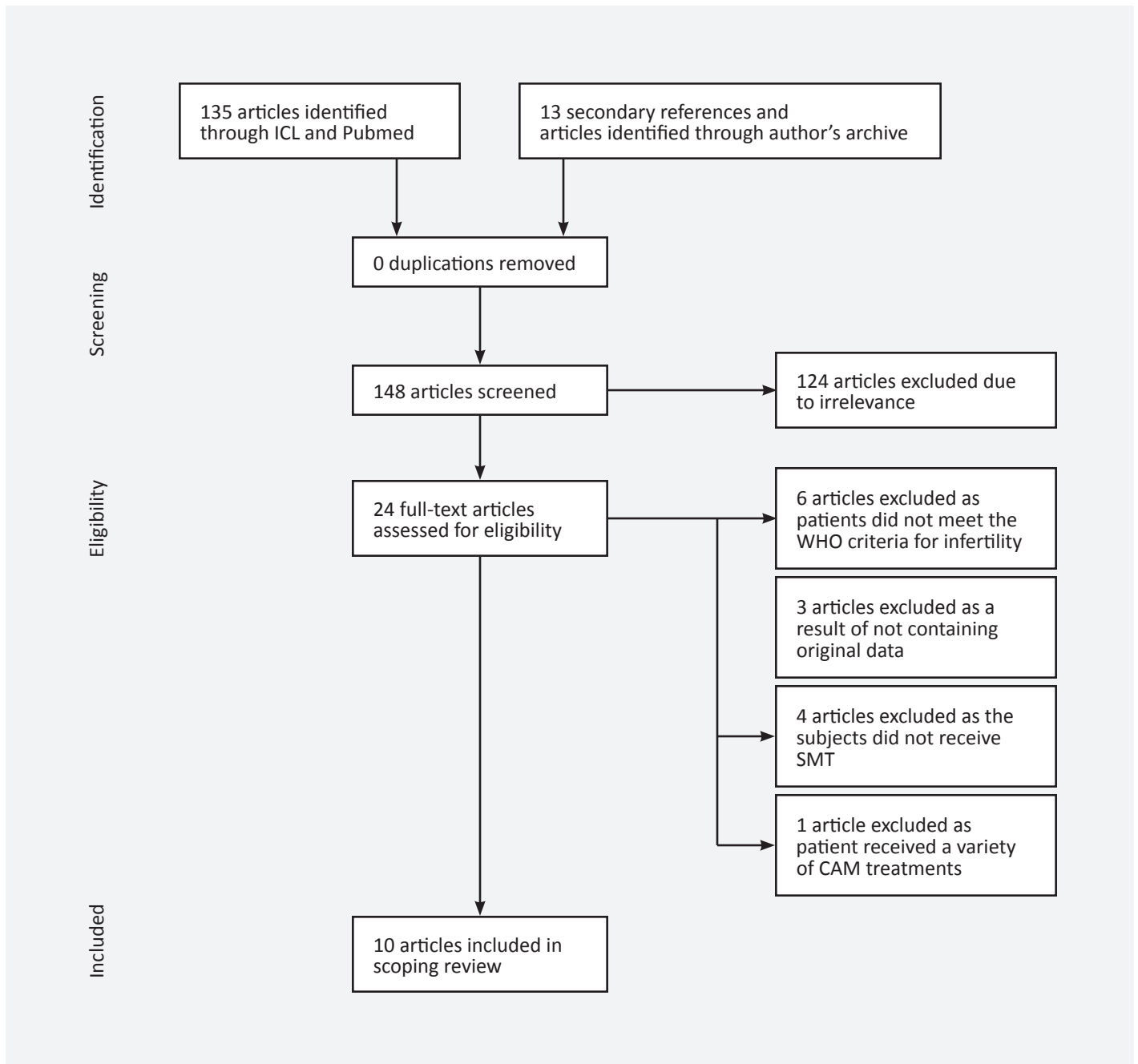


Figure 1.  
*Article flow through the review process.*

cles identified were written in English. For the purposes of this study, the WHO definition of infertility was adopted; i.e. “a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse<sup>18</sup>.”

One hundred and thirty-five peer reviewed articles were identified via ICL. Additionally 13 secondary references were identified from retrieved articles and from one author’s (BB) archive. Articles which did not contain original data (e.g. reviews and commentaries) were excluded. Hence, a total of 24 full text manuscripts were retrieved and assessed to determine whether they met our inclusion criteria which were: i) original data, ii) failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse, iii) treatment included spinal manipulation. Six articles were excluded because the patients did not clearly meet the WHO criteria for infertility; 4 papers were excluded because the subjects did not receive spinal manipulation; 3 papers were excluded because they did not contain original data; 1 paper was excluded because the patient received different types of CAM treatment from multiple practitioners, making the patient history difficult to decipher (Figure 1).

Both authors read all papers included in our analysis and extracted data to a spreadsheet (Tables 1 and 2). The extracted data included patient age, duration of infertility, diagnostic techniques used (e.g. palpation, postural exam, thermography), nature of treatment (e.g. spinal regions treated, whether HVLA or low force techniques were used), duration of treatment, outcome (pregnancy), causation (if known) and its temporal relationship to infertility, adverse events and any biological rationale for treatment affects offered by the study authors.

Because of the small number of cases reported, no attempt was made at a statistical analysis beyond descriptive statistics.

## Results

The 10 papers included in our analysis were all case studies dating from 2003 to 2013, and documenting the treatment of 11 patients in total.<sup>19-28</sup> The articles were all identified through searching the Index to Chiropractic Literature and each was published in either the Journal of Vertebral Subluxation Research or the Journal of Pediatric, Maternal and Family Health. The patients ranged in age from 22 to 39 years (mean and median ages: 31 years)

(Table 1). In the 10 instances where the number of years of infertility was stated (one case<sup>20</sup> simply reported ‘a number of years’), the duration ranged from one to eight years (mean: 3 years, median: 2 years) (Table 2). In the eight cases where time from commencement of treatment to time of conception could be estimated, the duration of treatment was one to 20 months (mean: 5 months, median 2 months). One patient reported resolution of amenorrhea after 8 months of treatment, but no pregnancy was recorded.<sup>24</sup> In five instances the mother delivered at full term, and in one instance a healthy baby was delivered in the 8<sup>th</sup> month<sup>25</sup>. In one case, no pregnancy was reported<sup>24</sup> and in three cases the outcome of the pregnancy was not reported<sup>20,21,27</sup>. In one case, the patient was only followed to the 6<sup>th</sup> month of pregnancy (Table 1).<sup>22</sup>

Within chiropractic, spinal manipulation may be performed entirely by hand, or with the assistance of any of a variety of devices which deliver a relatively low force when compared to manual manipulation. In our study eight patients received manual manipulation, four patients received device-assisted manipulation, and one patient received a combination of the two. Regions of the spine manipulated were not specified in three papers, but where reported included cervical: n= 5; thoracic: n=7; lumbar n=5, and sacral/sacroiliac joints: n=8. Hence, most patients received manipulation to more than one region of the spine. Four patients also received nutritional advice, and three patients were encouraged to perform exercises at home (Table 1).

A number of methods were used to determine where in the spine to apply manipulation (Table 1). All but one author used manual palpation of the spine. Additional conventional methods used in the papers reviewed were postural examination, orthopaedic tests such as range of motion, and the assessment of functional leg length inequality. Six patients received spinal x-rays. Additionally, six patients were subjected to both spinal thermography or thermometry, and surface electromyography. Four patients were subjected to manual muscle testing. One patient was subjected to analysis of heart rate variability.

In one instance, the patient had previously delivered a healthy child, but was unable to conceive following a sacral fracture.<sup>19</sup> In no other case was there an apparent link between spinal trauma and development of infertility.

In each paper, the authors offered a neurological ration-

Table 1.  
Age, diagnostic testing, and treatment of patients.

First author and reference	Age	Diagnostic techniques	Treatment techniques	Treatment duration and outcome
Adams JP <sup>19</sup>	22	Palpation, leg length, AK	HVLA to T/S and sacrum Uterine manipulation and lymphatic drainage	20 months 'Healthy baby' delivered
Anderson-Peacock E <sup>20</sup>	35	Palpation, postural exam, ROMs, leg length, thermography, electromyography, x-ray	Low Force to C/S, T/S, L/S and sacrum	2.5 months to conception Birth not reported
Anderson-Peacock E <sup>20</sup>	36	Palpation, postural exam, ROMs, leg length, thermography, electromyography, x-ray	Low Force to C/S, T/S, L/S, sacrum and cranium Home exercise	~ 2 months to conception Delivered full term
Bedell L <sup>21</sup>	27	Palpation, leg length, AK, postural exam, electromyography, thermography	Low Force C/S and sacrum Nutritional advice Craniosacral therapy	2 months to conception Birth not reported
Borkhuis S <sup>22</sup>	31	Palpation, postural exam, x-ray, thermography, SEMG, HRV	HVLA to unspecified sites Nutritional advice Exercise	1 month to conception Followed to 6 months of pregnancy
Kaminski TM <sup>23</sup>	31	Palpation, thermography, SEMG, leg length	HVLA and Low Force to unspecified sites	9 months to conception Delivered full term
Ko M <sup>24</sup>	39	Palpation, postural exam, ROMs, AK, leg length, x-ray	HVLA to T/S, L/S and sacrum Nutritional advice Exercise	8 months to resolution of amenorrhea No pregnancy reported
Lyons DD <sup>25</sup>	27	Thermography, SEMG, x-ray	HVLA to C/S, T/S, L/S and sacrum	1 month to conception Delivered healthy baby in 8th month
Phillips G <sup>26</sup>	37	Palpation, MMT, leg length	HVLA to C/S, T/S, L/S and sacrum	4 months to ovulation and IVF Delivered full term
Schwanz JW <sup>27</sup>	29	Palpation, thermometry x-ray	HVLA to sacrum	1 month to conception Birth not reported
Wolcott E <sup>28</sup>	28	Palpation, postural exam x-ray	HVLA to unspecified sites	Time to conception not reported Delivered full term

*Legend: AK=applied kinesiology; ROMs=ranges of motion; SEMG=surface electromyography; HRV=heart rate variability; MMT>manual muscle testing; HVLA=high velocity, low amplitude adjustment*

Table 2.  
Case features contributing to rationale for diagnosis and treatment.

First author and reference	Duration of infertility	Rationale		
		Causality/insult	Temporality	Author's biological explanation
Adams JP <sup>19</sup>	perhaps >1 year	No trauma. History of tilted uterus confirmed by gynecologist	4 months after care, she experienced first menses and 22 months after first adjustment she became pregnant	Attributes patient's dysfunction to a number of nerve roots
Anderson-Peacock E <sup>20</sup>	2 years	Initial onset of low back pain was subsequent to fractured sacrum. Had given birth 1 year before accident, but unable to conceive thereafter.	10 weeks of treatment and patient became pregnant	Attributes patient's dysfunction to a number of nerve roots
Anderson-Peacock E <sup>20</sup>	"a number of years"	No trauma. Fully blocked left fallopian tube and a partially blocked and damaged right fallopian tube	8 weeks of treatment and patient became pregnant	Attributes patient's dysfunction to a number of nerve roots
Bedell L <sup>21</sup>	perhaps >1 year	No trauma. Had history of 2 miscarriages and ulcerative colitis	90 days after beginning care, she discovered she was pregnant	Implicates S2, S3, S4 branches to the pelvic floor muscles and these mediate PNS control over pelvic organs
Borkhuis S <sup>22</sup>	3 years	No trauma. Menses last 2 weeks in duration	After 19 visits, patient reported being 6 months pregnant	Attributes patient's dysfunction to a number of nerve roots
Kaminski TM <sup>23</sup>	>1 year	No trauma. Diagnosed with "lazy system" and irregular ovulation.	9 months after care, patient became pregnant	Attributes patient's dysfunction to a number of nerve roots
Ko M <sup>24</sup>	4 years	No trauma. Had secondary amenorrhea since age 18	Following the 2nd visit, the patient reported the onset of her first menstrual cycle in 3 months	Implicates nerve roots T8-L1 and correction of sacral subluxations.
Lyons DD <sup>25</sup>	5 years	No trauma. Patient was very active (marathons, karate and kickboxing)	Conception estimated to have taken place on the day after the 14th visit	Implicates the upper lumbar nerves as well the pelvic nerves. Also implicates the twisting of the pelvis which could have torqued the uterus or fallopian tubes to prevent conception or gestation.
Phillips G <sup>26</sup>	3 years	History of endometriosis (duration not specified). History of LBP for 18 months and had long commutes to and from work (60-90 min)	After 4 months of care, patient went for 5th attempt of IVF and became pregnant	Implicates nerve roots T10 and T11 which supply the ovaries
Schwanz JW <sup>27</sup>	8 years	No trauma. Menstrual cycles typically lasted 40-60 days in length	19 days after her first adjustment, the patient reported a positive Early Pregnancy Test and obstetrician confirmed she was 4 weeks gravid. Therefore possibly pregnant at time of initiating care.	Suggests that there is a neurological explanation for the complaint and discusses other case reports that talk about possible neurological explanations
Wolcott E <sup>28</sup>	2 years	Ovarian cancer (9years prior to initial visit). Had surgical removal of tumor	After 14 visits, patient conceived naturally	Vertebral subluxations in the cervical, thoracic, lumbar and pelvic regions were corrected

ale for either the complaint or the management strategy (Table 2). Furthermore, the rationale invariably invoked the segmental innervation of organs of the reproductive system, implying that alteration in autonomic output to one or another organ was the root cause of the patient's infertility.

## Discussion

A systematic search of an electronic data base of the chiropractic literature, supplemented by papers from one author's archive, revealed only 10 original data papers dealing with the use of spinal manipulation in the management of female infertility. All of the papers were retrospective case studies dealing with, in total, 11 patients. All of the papers were identified through the Index to Chiropractic Literature, as the source journals are not indexed in PubMed. The most common reason for original data papers being excluded from this review was that the authors either did not report the duration of infertility, or reported a duration which was less than 12 months; i.e. did not meet conventional diagnostic criteria. Editors and authors of future papers on this topic should perhaps be alert to this consideration. Additionally, four papers were excluded because the patients did not receive spinal manipulation and three of 10 included papers did not specify the level(s) of the spine to which manipulation was targeted. Editors and authors will understand that the usefulness of papers is enhanced when information on 'dosage' is included – what is done, where and how often. The volume of papers and the design of each study does not provide for a strong body of evidence to guide clinical decision making. However, beyond this, the value of papers could have been improved by the thoughtful inclusion of clinical information which was almost surely at hand when the papers were authored.

The patients whose cases were reviewed were all in their 20s and 30s, hence likely in the midst of their reproductive years. In only one instance was there a recorded insult to the spine prior to the period of infertility.<sup>20</sup> Furthermore, different clinicians located sites for spinal manipulation variously in one or multiple regions of the spine. Hence, from the cohort of cases reviewed, it is difficult to discern how a clinician would identify, among infertile patients, those who would be "likely responders" to spinal manipulation.

Additionally, if one examines in detail the diagnostic and treatment regimes employed, it is difficult to identify

a model pattern of care. While all but one author reported the use of manual palpation to detect the vertebral level to manipulate, an approach supported by the literature, all authors reported the use of additional diagnostic methods which do not appear to be clinically justified. These included manual muscle testing, thermography, thermometry, surface EMG and assessment of heart rate variability, none of which have been shown to be valid or reliable methods of determining the level of the spine to manipulate.<sup>29</sup> If in fact unvalidated or unreliable methods are used to locate the site(s) at which to apply manipulation, it is difficult to know what importance to attach to the responses to manipulation at these sites. Nonetheless, all authors reported conventional methods of spinal manipulation, and most often applied manipulation to multiple regions of the spine.

## Limitations

Readers will be aware that scoping reviews such as this are a relatively new genre for which there is only developing consensus on methodology and quality assessment. Scoping reviews are typically used to assess the breadth and depth of available literature, rather than to weigh levels of evidence and reach conclusions about the value of interventions.<sup>17</sup> Consequently, readers should understand that the observations provided herein are not intended to directly influence clinical decision making.

## Conclusions

As one might expect with case reports, positive outcomes predominated in our scoping review of chiropractic management of infertility, and this may not represent the aggregate clinical experience of the chiropractic profession. While the duration of their complaint was 3 years on average, and resolution was experienced on average within a few months, these temporal relationships do not provide strong evidence that in these particular cases chiropractic care played a role in resolution of the patients' complaints. Further, as readers recognize, case studies do not provide comparisons to other treatments or no treatment – alternatives which may well have resulted in the same outcomes. Thus, in the absence of prospective studies, and particularly randomized controlled trials, it is not possible to say whether the patterns of care discerned from our corpus should be taken as models likely to lead to clinical success in the patient population at large.



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