Patient experience and satisfaction during chiropractic care:

A Systematic Review of the Literature for the UK General Chiropractic Council

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Date completed: April 2021
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Introduction

The chiropractic profession numbers in excess of 100,000 practitioners worldwide (European Chiropractors' Union, 2013) and has a lifetime utilisation rate of 22% globally (Beliveau et al., 2017). In the UK, the profession is statutorily regulated by law through the General Chiropractic Council which provides protection for the title of 'chiropractor' and assurances as to competences to practice and educational standards of chiropractors, thus underpinning public confidence in the profession and its relationship to wider health care provision in the UK.

As part of a growing movement within health care to support the measurement of the impact of health care provision in a more patient centred manner, focus has shifted toward a value-based care approach. Value based healthcare has been defined as delivering the highest quality care at the best cost, or, using a more societally focused definition *"…..the equitable, sustainable and transparent use of the available resources to achieve better outcomes and experiences for every person"* (Hurst et al., 2019, p. 3). This concept is at pains to differentiate 'value' as distinct from efficiency where the idea of cost minimisation simply focusing on cutting costs may achieve economic efficiencies at the expense of health outcomes. Notwithstanding, this approach has been championed as central to constructing contemporary health care provision with influential commentators such as Muir Gray stating *"We must now embrace value-based healthcare alongside the models of evidence-based medicine and quality improvement that have dominated debate in the past 20 years"* (Gray, 2017). It follows then, that a more patient centred approach to value must increasingly take into account not only clinical outcomes but patient experience and consequently, embedded within this movement, is an increasing emphasis on patient experience and satisfaction measures as key metrics in determining care quality. This is in addition to traditional metrics that ascertain general health or condition specific outcomes.

Patients attending for chiropractic care predominantly do so for musculoskeletal conditions with low back pain and neck pain constituting the most common reasons care is sought (Beliveau et al., 2017). Whilst contemporary meta-analyses of clinical trials now support the use of spinal manipulative therapy, a key component of chiropractic care, for such conditions (Masaracchio et al., 2019; Rubinstein et al., 2019), there is less and more heterogenic literature pertaining to the experiences and satisfaction that patients report as a consequence of receiving chiropractic care.

In 2008 the UK Department of Health published their report, *High Quality Care For All* in which patient experience was determined as one of the key determinants of healthcare quality (Department of Health, 2008). Understanding patient experiences during chiropractic care is thus important for several reasons. Firstly, in the context of a value-based health care paradigm such measures are increasingly looked to as measures of the value of an intervention over and above traditional clinical outcomes. For example, where effectiveness and risks are equal to alternative interventions, issues such as satisfaction and good experience (wating times, time with clinician, setting, practice and practitioner characteristics, etc) can tip the balance between competing choices. Secondly patient experiences and their impact on subsequent expectations of care have been shown to be reliable predictors of clinical outcomes. (Eklund et al., 2019; Manary, Boulding, Staelin, & Glickman, 2013; Myers et al., 2008).

The aim of this review was to identify, categorise and summarise the published literature pertaining to chiropractic patient experiences and satisfaction with chiropractic care.

Methods

Search strategy

An initial scoping search was conducted to refine the research question and construct a full review protocol, published on PROSPERO, ID: CRD42020203251. Several databases were searched in January 2021: PubMED, Cochrane, Excerpta Medical Database and Allied and Alternative Medicine (EMBASE), CINAHL, Index to Chiropractic Literature (ICL), and Web of Science. Terms included derivatives of chiropractic and patient experience and satisfaction (see Appendix A). The search was restricted to research published after 2005, following a systematic review published on patient satisfaction (Gaumer, 2006). A bibliography search was also conducted to check for relevant studies.

Study selection

Screening was pre-determined by inclusion and exclusion criteria. Papers were included if they: focused on patient satisfaction or patient experience, focused on chiropractic care. Primary empirical studies: qualitative, quantitative, and mixed-methods, published in English were included.

Papers were excluded if they were: not focused on patient experience (where the focus was perceptions of chiropractic care), spinal manipulative therapy not delivered by chiropractors, co-delivered interventions (where not possible to disaggregate results relating to chiropractic). Case studies, pilot studies, conference abstracts and non-empirical and secondary studies (commentaries, systematic reviews, editorials, protocols, guidelines) were excluded.

Titles and abstracts were examined by at least one reviewer, with full-texts examined by two reviewers. The screening and selection of studies is documented in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Flowchart (PRISMA) in Figure 1.

Data synthesis

Data were extracted from the final included studies, including: citation, country, aims, participants, setting, study design, measures of patient satisfaction and experience, other outcome measures, analysis, and intervention groups (where appropriate). All relevant results were also extracted.

Narrative synthesis was used to collate and integrate the findings of the included studies. Textual descriptions were developed to combine results and analyse the relationships between the studies (Centre for Reviews and Dissemination, 2009; Popay et al., 2006). A meta-analysis was unjustified, given the heterogeneity in study designs, participants, and outcome measures.

Assessment of methodological quality

Quality assessment was carried out on the included studies. The quality appraisal was conducted using Markoulakis and Kirsh (2013) quality assessment rubric. The rubric allows for the assessment of the methodological implications of the paper, with broadly defined score descriptions, allowing for evaluation of heterogenous study designs. Although the tool has not yet been independently validated, the quality assessment provides identification of the overall quality of the included studies, enabling this to be taken into consideration when synthesising the study results. The rubric further allows reviewers to see common areas of methodological weaknesses amongst the included studies.

Results

Study characteristics

Forty-three studies were identified from the literature search as eligible for inclusion in the review (Figure 1 and see Table 1 for full details of the included studies). The studies were conducted across the UK, Europe, North America, Australia, and South Africa. Chiropractic care was delivered in a variety of settings: private practice, university clinics, specialised clinics (military medical centres, therapeutic community facility). The studies included participants seeking chiropractic care for a variety of conditions (spinal pain, low back pain, neck pain, leg pain, headaches, musculoskeletal conditions) and treatment of specialised populations (paediatric patients, pregnant mothers, older adults, military personnel, athletes).

Figure 1: PRISMA flowchart of inclusion

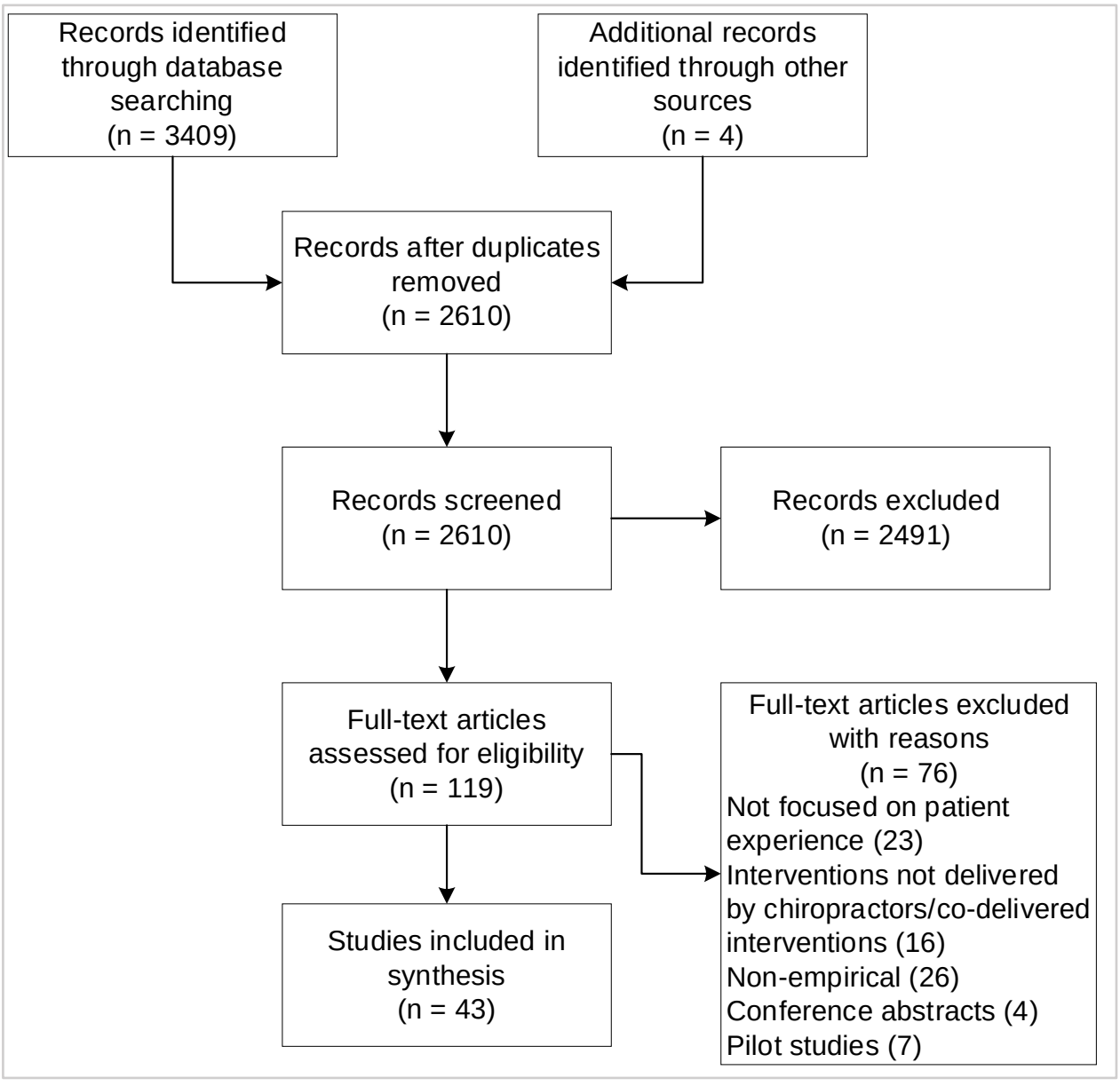

Table 1: Study Characteristics

Reference	Country	Aims	Participants	Setting of chiropractic care	Study Design	Specific patient satisfaction/ experience measures	Chiropractic intervention group	Control or comparison groups
Alcantara, Ohm, and Alcantara (2016)	U.S	To explore the quality of life and satisfaction of care of patients receiving chiropractic care with the Webster Technique	n = 126 participants (low back pain, other pain, headaches, and wellness care), mean age = 39.68 (SD 12.56) [18-74]. 97 females, 29 males.	Chiropractors participating in a PBRN - the International Chiropractic Paediatric Association who employ the Webster Technique.	Prospective cohort study - measures taken at baseline and following a course of chiropractic care.	Patient satisfaction (RAND VSQ9)	Chiropractic care - Webster Technique, spinal adjustments, and adjunct therapies.	
Alcantara, Nazarenko, Ohm, and Alcantara (2018)	U.S	To explore the quality of life and satisfaction of pregnant patients after receiving chiropractic care	n = 343 pregnant patients, mean age = 30.96 (4.64).	Chiropractors participating in a PBRN - the International Chiropractic Paediatric Association who employ the Webster Technique.	Prospective cohort study - measures taken at baseline and following a course of chiropractic care.	Patient satisfaction (RAND VSQ9)	Chiropractic care - Webster Technique, spinal adjustments, and adjunct therapies.	
Amorin-Woods, Parkin-Smith, Cascioli, and Kennedy (2016)	Australia	To examine the outcomes of chiropractic MMT compared to usual care for patients with non-specific spinal pain within the context of a substance misuse rehabilitation	n = 71 patients with non-specific spinal pain.	Residential therapeutic community facility, with 14 weeks substance misuse rehabilitation (regular counselling and rehabilitative activities). A chiropractic community service was set up, delivered by supervised chiropractic interns.	Clinical audit - evaluation of outcomes following a choice of care.	Patient satisfaction (Patient Satisfaction Questionnaire - PSQ)	Usual care plus a package of chiropractic manual and manipulative therapy (Manual and manipulative therapy received six treatments, once per week, over a six-week period).	Usual care and simple analgesics (paracetamol, ibuprofen).

Bronfort et al. (2011)	U.S	To assess the relative efficacy of supervised exercise, spinal manipulation, and home exercise for the treatment of chronic low back pain.	n=301 chronic low back pain patients, mean age = 45.1 (11.0), F%= 60.5	University based clinic, with treatment provided by 9 experienced chiropractors	Randomised-controlled trial - comparing spinal manipulative therapy, supervised exercise therapy, and home exercise and advice	Patient satisfaction was (7-point scale, with 1 representing ‘‘completely satisfied, couldn’t be better’’ and 7 ‘‘completely dissatisfied, couldn’t be worse’)	Spinal manipulative therapy, delivered by chiropractors who determined the frequency and number of treatments. Included short-lever, low-amplitude, high-velocity spinal manipulative therapy and adjunct therapies.	• Supervised exercise therapy – 20, 1-hour sessions, performing core strengthening exercises and abdominal exercises emphasising high number of repetitions and progressive increase in muscle load. • Home exercise and advice – 2, 1 hour appoints with advice and instruction on self-care measures, ergonomic recommendations, simple stretching and strengthening exercises.
Bronfort et al. (2012)	U.S	To assess the relative efficacy of spinal manipulative therapy and medication and home exercise for the treatment of acute and subacute neck pain.	n = 272 participants with acute and subacute neck pain. SMT group: n = 91, mean age 48.3 (15.2), female: 58.2%. HEA group: n = 91, mean age 48.6 (12.5), females 65.9%. MED group: n = 90, mean age: 46.8 (12.2), females: 72.2%	University affiliated clinics, licensed chiropractors with 5 years minimum clinical experience.	Randomised controlled trial - comparing spinal manipulation, medication, and home exercise	Patient satisfaction (Multidimensional satisfaction instrument, scored on a 1-5 scale: poor, fair, good, very good, excellent). Includes two subscales, information and general care, which are scored by summing and transforming results to 0-100 scales (0 = worst, 100 = best). Global satisfaction (1-7 scale, from 1 = 'completely satisfied, couldn't be better' to 7 = 'completely dissatisfied, couldn't be worse')	Spinal manipulative therapy, consisting of high velocity, low amplitude joint manipulation (diversified technique). Other therapies included light soft tissue massage, assisted stretching, heat or cold packs. Number of visits was determined by treating chiropractor.	• Medication – provided by licensed physician at a pain management clinic and consistent of non-steroidal anti-inflammatory drugs. The number of visits and choice of medication was at physicians’ discretion. • Home exercise and advice – participants attended two, one-hour visits focusing on self-mobilisation exercises for the neck and shoulders over a two-week period. Participants were instructed to perform 5-10 repetitions of the exercises 6-8 times a day at home.

Bronfort et al. (2014)	U.S	To compare spinal manipulative therapy plus home exercise and advise to home exercise and advice alone in reducing leg pain in patients with subacute and chronic back related leg pain	n = 192 patients with back related leg pain. Spinal manipulative therapy plus home exercise group: n = 96, mean age = 57.1 (12.0), females 59%. Home exercise group: n = 96, mean age = 57.5 (11.9), females = 68%	Institution-affiliated research clinics based at two universities.	Pragmatic controlled trial - comparing spinal manipulative therapy and home exercise and advice	Patient satisfaction (7-point scale, from 1 = poor to 7 = excellent).	Up to 30 visits for spinal manipulation therapy, including high velocity, low amplitude thrust procedures or low velocity, variable amplitude mobilisation manoeuvres. Frequency of visits, treatment, and adjunct therapies were decided by the chiropractor. Patients also attended four home exercise and advice visits.	Home exercise and advice was delivered one-to-one in four 1-hour visits, over 12 weeks. This included instruction and practice of positioning and stabilisation exercises. These were individualised to patients. Patients were instructed to do 8-12 repetitions of each exercise every other day.
Brown et al. (2014)	Australia	To describe patient characteristics and summarize their perceptions of chiropractic in Australia.	n = 486 patients, females 324 (67.1%), males 159 (32.9%)	96 chiropractic clinics across Australia	Cross-sectional survey	Perceptions of current chiropractic care (Work Force Study Survey Questionnaire)		
Butler and Johnson (2008)	U.S	To examine health-care satisfaction by provider type and its effect on return to work.	n = 1831 workers who filed workers' compensation claims for occupational back pain.	Chiropractors across the U. S	Prospective cohort study - measured at baseline, 6 months, and 12 months after filing a claim for occupational back pain.	Patient satisfaction (quality of care, good diagnosis, thorough treatment, effective treatment, took pain seriously, listening, respect, explanations of injury and treatment). Overall satisfaction (5-point scale - 1 very satisfied to 5 very dissatisfied). Individual healthcare satisfaction with the different physicians (4-point scale - 1 agree strongly to 4 disagree strongly.		

Crowther (2014)	Canada	To explore the similarities and differences in satisfaction and dissatisfaction experiences of patients attending primary care physicians and chiropractors	n = 197 patients, mean age - 55.0 (16.1), 122 females (62%), 75 males (38%)	Full-time chiropractors who had greater than 5 year's experience	Qualitative study - semi-structured interviews	Semi-structured interview s based on Critical Incident Technique (discussing satisfying/dissatisfyi ng experiences in chiropractic care and medical care).		
Damaske, McCrossin, Santoro, and Alcantara (2016)	Belgium, Denmark, Finland, France, Greece, Hungary, Ireland, Italy, Norway, Portugal, Spain, Sweden, and the United Kingdom	To examine chiropractic patients' beliefs, experiences, and satisfaction with chiropractic care in an open environment.	n = 1109 patients, 650 females, 458 males, 1 not indicated. Mean age = 46.5 (SD 15.4).	Registered chiropractors across Europe utilising an open environment.	Cross-sectional survey	Patient satisfaction (11-point numerical rating scale: 0 = poor, 10 = exceptional)		
Eriksen, Rochester, and Hurwitz (2011)	US, Canada, Europe	To describe both symptomatic reactions and clinical outcomes following a short term of chiropractic care.	n = 1090 patients (multiple complaints, 80.9% spinal pain/dysfunction or headaches). Mean age = 46.1 (14.2). 699 females (64.1%), male 391 (35.9%)	83 chiropractors in private practice	Prospective cohort study - following patients after upper cervical technique in chiropractic care	Patient satisfaction (11-point numerical rating scale: "How satisfied are you with the treatment by your chiropractor?" ranging from 0 = very dissatisfied to 10 = very satisfied)	Upper cervical technique - patient management and visit frequency were left to the discretion of the chiropractor, but asked to refrain from using any other type of spinal manipulation or physical therapy	
Field and Newell (2016)	UK	The examine and compare the outcomes of NHS and private patient groups presenting with musculoskeletal conditions to chiropractors	n= 8,222 NHS referred and private patients (low back and neck pain) Mean age (NHS, 49.1; Private 49.2) Female, 60.2% and 48.3 % NHS and Private respectively)	Consortium of UK-based practices located in the south of the UK	Prospective cohort of patients receiving a course of chiropractic care	Patient satisfaction (7 item scale: "Overall, how have you found the service and care your received?" ranging from 1 = unacceptably poor to 7 = a very high level, I would recommend friends with similar problems to consider.		

Foley, Steel, and Adams (2020)	Australia	To examine the extent to which patients with chronic conditions experience person-centred care when consulting complementary medicine practitioners	n = 153 participants with chronic conditions, 82.4% female, 17.0% male, 0.7% transgender. Chiropractic sample: n = 28 participants, 67.9% female, 32.1% male	Chiropractors participating in a PBRN	Cross-sectional survey	Experience of care and patient-practitioner communication (Patient-Centred Care Scale - PCCS, Perceived Provider Support Scale - PPSS, and the Patient Assessment of Chronic Illness Care Scale - PACIC)		
Gaumer and Gemmen (2006)	US	To determine the differences in attitudes and other determinants of care-seeking behaviour between persons who have used chiropractic services and persons who have not.	n = 800. Never visited a chiropractor: n = 400, 56.5% female, 43.5% male. Have visited a chiropractor: n = 400, 65.0% female, 35.0% male.	-	Cross-sectional survey - national survey	Satisfaction with care (National survey)		
Goertz et al. (2013)	US	To assess whether chiropractic manipulative therapy and standard medical care reduces pain and increases physical functioning compared to standard medical care only for the treatment of acute low back pain.	n = 91 active-duty military personnel with acute LBP. Standard medical care n = 46, 39 males (84.8%). Standard Med Care + Chiropractic n = 45, 39 males (86.7%)	Military medical centre	Pragmatic randomised comparative study - comparing chiropractic manipulative therapy and standard medical care to standard medical care	Patient satisfaction (11-point numerical rating scale, "How satisfied are you with the overall results of your care?" 0 - not at all satisfied, 10 - extremely satisfied).	Chiropractic manipulative therapy and standard medical care - focused history and physical examination and diagnostic imaging as indicated. High-velocity low amplitude manipulation, and ancillary treatments at the chiropractors discretion, including massage, exercises, advice on daily living, postural advice, and mobilisation.	Standard medical care - including any or all: history, physical examination, diagnostic imaging, self-management education, pharmacological management (analgesics and anti-inflammatories), physical therapy, referrals.

Goertz et al. (2018)	US	To determine the effect of adding chiropractic care to usual medical care for patients with low back pain	n = 750 active-duty military participants with low back pain, 23.3% female, 76.7% male. Mean age = 30.9 *8.7).	Two military medical centres and one military training site	Pragmatic comparative trial - comparing usual medical care with chiropractic care to usual medical care	Patient satisfaction (11-point numerical rating scale: 0 = not at all satisfied, 10 = extremely satisfied)	Usual medical care with chiropractic care - Participants had usual medical care, and up to 12 chiropractic care visits. This included spinal manipulative therapy for the low back. Treatment decisions on manipulation were based on patient diagnosis, patient preference, prior care, and medical/case history. Additional therapeutic procedures includes rehabilitative exercises, interferential current therapy, ultrasound, cryotherapy, superficial heat, and other manual therapies.	Usual medical care - this was any care recommended or prescribed by military clinicians. This included: self-management advice, pharmacological pain management, physical therapy, or referral to a pain clinic.
Haas, Sharma, and Stano (2005)	US	To identify relative provider costs, clinical outcomes, and patient satisfaction for the treatment of low back pain.	N = 837 chronic low back pain (attending chiropractor: n = 527, mean age 42.2 (14.4), females 55.4%. Attending medical care: n = 310, mean age 52.6 (12.7), females 52.6%). N = 1943 acute low back pain patients (attending chiropractor: n = 1328, mean age = 42.1 (12.9), 47.7% females. Attending medical care: n = 615, mean age = 38.5 (12.1), females 46.7%).	Practices of 51 chiropractic clinics	Prospective cohort study - comparing chiropractic care to medical care	Patient satisfaction (100-point scale)	Chiropractic care - spinal manipulation, physical modalities, exercise plan, and self-care education.	Medical care - prescription drugs, exercise plan, self-care advice.

Haas, Aickin, and Vavrek (2010)	US	To present a model to identify the effects of expectancy of treatment success and patient-provider encounter on outcomes in an open-label randomised trial in treatment of cervicogenic headache.	n = 80 participants with cervicogenic headache, mean age = 36 (SD, 11) 64 (80%) female, 18 (20%) male.	Private chiropractic clinics	Preliminary path analysis from a randomised controlled trial which compared spinal manipulative therapy to minimal light massage	Measures of patient-provider encounters including patients' perception of chiropractors enthusiasm for care, comfort treating cervicogenic headaches, confidence in care success, and adequate time (Likert scale)	Spinal manipulative therapy (high velocity, low amplitude spinal manipulation of the cervical and upper thoracic spine) delivered by a chiropractor.	Minimal light massage (gentle effleurage and gentle petrissage of the neck and shoulder muscles) delivered by a chiropractor.
Haas et al. (2018)	US	To determine the effect of spinal manipulative therapy on clinical outcomes in adults with chronic cervicogenic headache	n = 256 participants with cervicogenic headache, mean age = 41 (SD, 13). 182 (71.1%) female, 74 (28.9%) male.	University affiliated clinics, either at a university of private clinics, by licensed chiropractors with 6-35 years of clinical experience.	Randomised-controlled trial comparing spinal manipulative therapy to minimal light massage	Satisfaction with care (1–6 scale): 1 - extremely dissatisfied, 2 - dissatisfied, 3 - somewhat dissatisfied, 4 - somewhat satisfied, 5 - satisfied, 6 - extremely satisfied	Spinal manipulative therapy (high velocity, low amplitude spinal manipulation of the cervical and upper thoracic spine) delivered by a chiropractor. Groups included: 6 sessions of SMT and 12 sessions of light massage, 12 sessions of SMT and 6 sessions of light massage, and 18 sessions of SMT and 0 sessions of light massage	Minimal light massage (gentle effleurage and gentle petrissage of the neck and shoulder muscles) delivered by a chiropractor. Groups included: 0 sessions of SMT and 18 sessions of light massage.
Haneline (2006)	US	To determine whether patients with acute neck pain managed with chiropractic manipulative therapy benefited from chiropractic care and their satisfaction.	n = 94 acute neck pain patients, mean age = 39.6 (15.7), 60 females (64%) and 34 males (36%).	Private chiropractic clinics	Cross-sectional survey	Patient satisfaction (6-point satisfaction scale - 1 'very satisfied' to 6 'very dissatisfied', questions on likelihood of choosing chiropractic care again, choosing which provider helped their condition the most)		

Hays et al. (2020)	US	To evaluate the perceptions of chronic low back pain and neck pain patients receiving chiropractic care.	n = 1835 patients with chronic low back pain or neck pain (mean age = 49), 74% female, 26% male.	Private chiropractic clinics	Cohort study - baseline and 3 month follow-up	Patient perceptions of care including communication and global rating of the provider (items from the CAHPS Clinician & Group Survey and additional items)		
Hermansen and Miller (2008)	Norway	To gain an insight into everyday life and the struggles of an ADHD child having undergone chiropractic care as perceived by their mothers.	n = 5 mothers, with in total 6 children with ADHD, age range 6 to 16 years, 3 females, 3 males	Single chiropractic clinic	Qualitative study - phenomenological study with semi-structured interviews.	Semi structured interviews		
Houweling et al. (2015)	Switzerland	To compare differences in pain levels, change in overall health, and patient satisfaction in those seeking care from medical doctors and doctors of chiropractic	n = 719 participants with spinal, hip, or shoulder pain. Medical care - n = 403, mean age = 45.7 (13.87), female 162 (40%), male 88 (22%). Chiropractic - n = 316, mean age = 41.3 (12.93), female 132 (42%), 74 (23%)	First-contact care patients who previously contacted the Swiss telemedicine provider regarding treatment advice, and who then consulted medical doctors or chiropractors regarding spinal, hip, or shoulder pain.	Retrospective cohort study - baseline and 4 months	Patient satisfaction (5-point likert scale, ranging from very satisfied to very unsatisfied).		
Lambers and Bolton (2016)	Netherlands	To describe the quality of the perceived therapeutic alliance by patients and chiropractors	n = 207 chiropractic patients, 118 females (57.0%), 84 males (40.6%), 5 missing (2.4%)	Patients receiving care from chiropractors working in private practice in the Netherlands.	Cross-sectional survey	Working alliance (Werkalliantievragenlijst - WAV-12 client version, rating each statement on 5-pont Likert scale ranging from 'seldom to never' to 'always'.		

Leininger, Evans, and Bronfort (2014)	US	To assess satisfaction with care after receiving spinal manipulation therapy for acute and subacute neck pain	n = 272 participants with acute and subacute neck pain. SMT group: n = 91, mean age 48.3 (15.2), female: 58.2%. HEA group: n = 91, mean age 48.6 (12.5), females 65.9%. MED group: n = 90, mean age: 46.8 (12.2), females: 72.2%	University affiliated clinics, licensed chiropractors with 5 years minimum clinical experience.	Secondary data analysis of data from a randomised controlled trial - comparing spinal manipulative therapy, medication, home exercise and advice	Patient satisfaction (Multidimensional satisfaction instrument, scored on a 1-5 scale: poor, fair, good, very good, excellent). Includes two subscales, information and general care, which are scored by summing and transforming results to 0-100 scales (0 = worst, 100 = best). Global satisfaction (1-7 scale, from 1 = 'completely satisfied, couldn't be better' to 7 = 'completely dissatisfied, couldn't be worse')	Spinal manipulative therapy, consisting of high velocity, low amplitude joint manipulation (diversified technique). Other therapies included light soft tissue massage, assisted stretching, heat or cold packs. Number of visits was determined by treating chiropractor.	• Medication – provided by licensed physician at a pain management clinic and consistent of non-steroidal anti-inflammatory drugs. The number of visits and choice of medication was at physicians' discretion. • Home exercise and advice – participants attended two, one-hour visits focusing on self-mobilisation exercises for the neck and shoulders over a two-week period. Participants were instructed to perform 5-10 repetitions of the exercises 6-8 times a day at home.
Mace, Cunliffe, and Hunnisett (2012)	UK	To explore whether specific aspects of chiropractic treatment styles influence satisfaction rates.	n = 186 patients, 70% females, 30% males	3 chiropractic clinics	Cross-sectional survey (quantitative and qualitative)	Patient satisfaction (0-10 scale, and qualitative question - what they would change to improve satisfaction).		
MacPherson, Newbronner, Chamberlain, and Hopton (2015)	UK	To explore patients' experiences and expectations of chiropractic care, perceptions of risks and benefits, and implications for chiropractors' fitness to practise.	n = 544 current and former patients, mean age = 54.5. Female = 360 (66%), male = 180 (33%), missing 4 (0.7%).	Current and former patients of registered chiropractors.	Cross-sectional survey	Patient experience was measured with a questionnaire (developed from literature and prior qualitative work).		

Maiers, Bronfort, et al. (2014)	US	To determine the relative short- and long-term effectiveness of spinal manipulative therapy with home exercise, supervised rehabilitative exercise and home exercise, and home exercise alone for older adults with chronic neck pain.	n = 241 older adults with chronic neck pain. Spinal manipulative therapy and home exercise group: n = 80, mean age = 71.7 (5.2), 45.0% females. Supervised rehabilitative exercise and home exercise: n = 82, mean age = 72.6 (5.6), 51.2% females. Home exercise group: n = 79, mean age = 72.7 (5.3), 44.3% females.	University chiropractic clinic, delivered by 11 licensed chiropractors with a minimum of 5 year's experience	Randomised controlled trial - comparing spinal manipulative therapy, supervised exercise, and home exercise	Patient satisfaction (7-point scale from 1 - completely satisfied, couldn't be better to 7 completely dissatisfied, couldn't be worse).	Spinal manipulative therapy, consisting of high velocity, low amplitude joint manipulation (diversified technique). Other therapies included light soft tissue massage, assisted stretching, heat or cold packs. Number of visits was determined by treating chiropractor.	• Supervised exercise program – information and instruction for self-care of pain, light aerobic warm-up, instructions and monitoring of low load exercise with graded progression, and stretching, strength and balance exercises. Tailored to individual ability, delivered one-to-one by a therapist. 20 sessions. • Home exercise program – information and instructions for self-care of pain, stretching exercise, muscle strength and endurance exercises, balance exercises. Tailored to individual ability.
Maiers, Vihstadt, Hanson, and Evans (2014)	US	To explore patients' perceptions and satisfaction of spinal manipulative therapy and exercise	n = 222 older adults (65+) with chronic neck pain, mean age = 72.2 (5.4), female = 47%	University chiropractic clinic, delivered by 11 licensed chiropractors with a minimum of 5 year's experience	Mixed-methods study embedded in a randomised controlled trial comparing spinal manipulative therapy, supervised exercise, and home exercise	Qualitative interview questions around satisfaction and worthwhileness of care.	Spinal manipulative therapy, consisting of high velocity, low amplitude joint manipulation (diversified technique). Other therapies included light soft tissue massage, assisted stretching, heat or cold packs. Number of visits was determined by treating chiropractor.	• Supervised exercise program – information and instruction for self-care of pain, light aerobic warm-up, instructions and monitoring of low load exercise with graded progression, and stretching, strength and balance exercises. Tailored to individual ability, delivered one-to-one by a therapist. 20 sessions. • Home exercise program – information and instructions for self-care of pain, stretching exercise, muscle strength and endurance exercises,

								balance exercises. Tailored to individual ability.
Maiers, Hondras, Salsbury, Bronfort, and Evans (2016)	US	To explore patients' perceptions of and satisfaction with spinal manipulative therapy and home exercise with advice	n = 174 patients with chronic back-related leg pain, mean age = 57.0 (11.5), females 115 (66%), male 59 (34%).	Institution-affiliated research clinics based at two universities.	Qualitative interviews following a randomised controlled trial comparing spinal manipulation therapy to home exercise and advice	Qualitative interview questions around satisfaction and worthwhileness of care.	Up to 30 visits for spinal manipulation therapy, including high velocity, low amplitude thrust procedures or low velocity, variable amplitude mobilisation manoeuvres. Frequency of visits, treatment, and adjunct therapies were decided by the chiropractor. Patients also attended four home exercise and advice visits.	Home exercise and advice was delivered one-to-one in four 1-hour visits, over 12 weeks. This included instruction and practice of positioning and stabilisation exercises. These were individualised to patients. Patients were instructed to do 8-12 repetitions of each exercise every other day.
Miller et al. (2019)	UK	To investigate mothers' reports of infant condition after chiropractic care, satisfaction, and side-effects.	n = 2001 mothers, age of infants receiving care <12 weeks: n = 1583 (86%), >12 weeks n = 256 (14%). 909 females (45%), males 1092 (55%)	Private chiropractors from 15 clinics, and within a teaching clinic.	Cohort study - baseline and follow-up (fourth visit or discharge visit)	Patient satisfaction (11-point scale)		
Moore, Leaver, Sibbritt, and Adams (2020)	Australia	To estimate the features of headaches in patients presenting to chiropractic care, and to explore associations with headaches type and patient satisfaction with headache management by a chiropractor	n = 203 patients with headache, 72.9% female, 27.1% male. Majority of participants were aged between 51-65 years.	Chiropractors participating in a PBRN	Cross-sectional survey	Patient satisfaction - 'please select which option best describes your level of satisfaction with chiropractic management of your headaches'		

Myburgh, Boyle, Larsen, and Christensen (2016)	Denmark	To explore and describe health care encounters and perceived value in chiropractic practice	n = 12 patients for first consultation interview, 35 patients completed follow-up consultation interview, 11 patients had a first consultation videoed, 24 patients had a follow-up consultation videoed	Private practice	Mixed-methods study, interviews and observations	Patient experience (through qualitative interviews)		
Navrud, Miller, Eidsmo Bjørnli, Hjelle Feier, and Haugse (2014)	UK	To explore parent satisfaction with paediatric chiropractic care	n = 395 infants, aged 1 day up to 36 weeks, 174 females (44.1%), 221 males (55.9%). Data reported by parents.	Chiropractic teaching clinic	Cohort study - baseline and discharge	Patient satisfaction (10-point scale, from 1 "not at all" to 10 "completely satisfied"		
Newell, Diment, and Bolton (2016)	UK	To explore the feasibility of collected health outcomes using a web-based PROM system within UK chiropractic practice	n = 1895 patients with low back or neck pain, mean age = 44.6 (13.0), 1010 females (53%), male = 885 males (47%)	Private practice	Cohort study - baseline and 90 days	Patient experience (rating their degree of patient-centredness in 5 domains: self-management, satisfaction with care, involved in decision making, explanation, and time, rating from 'very good' to 'very poor')		
Ryan, Too, and Bismark (2018)	Australia	To compare the frequency and nature of complaints about chiropractors, osteopaths, and physiotherapists	n = 1139 complaints	-	Retrospective data analysis of national dataset (cross-sectional)	Patient dissatisfaction (Complaints dataset. These are coded into domains (health, performance, conduct) and into 11 complaint issues (e.g. treatment, communication, procedures).		
Sadr, Pourkiani-Allah-Abad, and Stuber (2012)	Canada	To explore the experience of chiropractic treatment for pregnant women with low back pain, and their chiropractors.	n = 11 pregnant patients, age range 24 - 36.	Chiropractors actively seeing at least one pregnant patient	Qualitative study - semi-structured interviews	Chiropractic treatment experience for their low back pain during pregnancy (semi-structured interviews).		

Schulz et al. (2019)	US	To determine the short- and long-term effectiveness of spinal manipulative therapy with home exercise, supervised rehabilitative exercise and home exercise, and home exercise alone for older adults with chronic low back pain	n = 241 older adults (65+) with chronic low back pain. Spinal manipulation therapy and home exercise group: n = 81, mean age 72.5 (5.6), females 46 (56.8%), . Supervised rehabilitative exercise and home exercise group: n = 80, mean age = 73.6 (5.3), females 38 (47.5). Home exercise group: n = 80, mean age = 74.7 (5.6), females 40 (50.0%)	University chiropractic clinic, delivered by 11 licensed chiropractors with a minimum of 5 year's experience	Randomised-controlled trial - comparing spinal manipulative therapy, supervised exercise therapy, and home exercise and advice	Patient satisfaction (7-point scale, from 1 = 'completely satisfied, couldn't be better' to 7 = 'completely dissatisfied, couldn't be worse')	Spinal manipulative therapy and home exercise. Manual treatment based on condition, adjunct therapies to facilitate spinal manipulative therapies. Number of visits and technique used was determined by chiropractor.	• Supervised exercise program – information and instruction for self-care of pain, light aerobic warm-up, instructions and monitoring of low load exercise with graded progression, and stretching, strength and balance exercises. Tailored to individual ability, delivered one-to-one by a therapist. 20 sessions. 60 minutes per sessions. Once a week. • Home exercise program – information and instructions for self-care of pain, stretching exercise, muscle strength and endurance exercises, balance exercises. Tailored to individual ability. Delivered one-to-one by a therapist. 4 sessions. 45-60 minutes per session. Once a week.
Stomski et al. (2019)	Australia	To establish the use of person-centred care delivered by chiropractic students	n = 108 adults with non-specific spinal pain, 59.4% male, 40.6% female, mean age = 363. (SD 13.8)	Three chiropractic teaching clinics	Cohort study - pain intensity measures at baseline, and experience measures at fourth consultation.	Person-centred care in consultations (Consultation and Relational Empathy questionnaire), process involved in medical consultations for musculoskeletal disorders (Picker Musculoskeletal Questionnaire).		
Talmage, Korporaal, and Brantingham (2009)	South Africa	To determine factors that may affect satisfaction levels of athletes	n = 30 athletes, mean age = 35.6 (15.6), 63.3% male.	Chiropractic care delivered by students in sport settings (surfing competition,	Cross-sectional survey	Patient satisfaction (checklist of yes/no responses, including subscales of competence,		

		receiving chiropractic care		bouldering competition, walk/run event)		humaneness, communication, and demeanour)		
Walker, Hebert, Stomski, Losco, and French (2013)	Australia	To examine the comparative effectiveness of a brief chiropractic intervention compared with sham treatment for participants with spinal pain.	n = 183 patients with spinal pain. Usual care group: n = 92, mean age 56.9 (14.6), 39 females 42.4%. Sham group: n = 91, mean age 53.0 (14.3), 28 females (30.8%).	Eight chiropractors	Randomised controlled trial - usual chiropractic care compared to sham group.	Treatment satisfaction (5 response options ranging from very dissatisfied to very satisfied, dichotomised in analysis)	Usual chiropractic care - chiropractors administered individualised chiropractic care in line with their usual treatment approach (2 treatments with approximately 1 week between treatments).	Sham group - detuned ultrasound, low impulse thrust randomly administered on and around the spine using an activator on its lowest output and through a tongue depressor to disperse any remaining force, randomly placed hand on the spine.
Weigel, Hockenberry, and Wolinsky (2014)	US	To compare function, health, and satisfaction between chiropractic care and medical treatments in Medicare beneficiaries	n = 12170 Medicare beneficiaries with diagnosis of musculoskeletal disease, sprains or strains of joints and muscles. Aged over 65. 37% male.	Private chiropractic care covered by Medicare	Cross-sectional survey - national survey from Medicare	Patient satisfaction (addressing quality of care received, doctor's concern for overall health, costs, access, follow-up care, information, from the Medical Current Beneficiary Survey)		
Wells et al. (2020)	US	To explore older adults' perceptions of healthcare during a clinical trial for low back pain (primary care, parallel primary care and chiropractic care, collaborative primary and chiropractic care)	n = 115 older adults with low back pain, 64% male, 36% female, mean age = 72.9 (6.2)	Licensed chiropractors at a chiropractic research centre.	Qualitative interviews (secondary data analysis)	Structured interviews (following a randomised controlled trial)	Chiropractic treatment consisted of mobilization, instrument assisted manipulation, and/or spinal manipulative therapy focused on the low back complaint.	

Synthesis of results

Patient satisfaction with Chiropractic Care

Generally, chiropractic patients are very satisfied with their care with high proportions generating consistently high satisfaction scores (Damaske et al., 2016; Mace et al., 2012). This, surprisingly is not restricted to only patient groups receiving care in the independent sector where there is evidence that a significant proportion of chiropractic patients are comparatively well with fewer co-morbidities than patients in the public sector, at least in the UK. Indeed, patients with significant co morbidities in the public sector reported higher satisfaction scores than private patients where NHS patients were more likely to have had their expectations exceeded than private patients (Field & Newell, 2016). Additionally, these results were reported by a wide variety of patients with further research suggesting satisfaction is not limited to a particular condition seen in chiropractic practices. For example, studies recruiting patients presenting with conditions commonly seen by chiropractors (Beliveau et al., 2017) such as low back, neck pain and headaches all reported high to very high satisfaction/experience scores with care (Haneline, 2006; Hays et al., 2020; Moore et al., 2020; Newell et al., 2016). This is also true where parents report on satisfaction with pediatric care where scores range from around 75-95% satisfaction (Alcantara et al., 2018; Alcantara et al., 2016; Miller et al., 2019; Navrud et al., 2014).

Whilst much of the data concerning satisfaction with chiropractic care comes from observational or qualitative studies, nearly one quarter (n=10) of the studies included in this review were randomised clinical trials (Table 2). Notwithstanding the heterogenic nature of these studies, all compared chiropractic treatment or spinal manipulative therapy delivered by chiropractors compared to a comparator group. These comparators included some form of exercise, medication, light massage or a variety of sham interventions. Five of these trials used a combined intervention with SMT as an addition to standard medical care(Goertz et al., 2013; Goertz et al., 2018) and a further 3 explored adding SMT to a some form of home exercise (Maiers, Bronfort, et al., 2014; Schulz et al., 2019) or home exercise and advice (Bronfort et al., 2014). Conditions recruited in trials included LBP (n=7), neck pain (n=2), spinal pain (n=1) and headache (n=1). Measurement of satisfaction used a range of scales (1-7; 0-11; 1-6 and 1-5 numerical scales) and had a range of follow up points from a single point at 2 weeks to multiple points up to 52 weeks.

For all clinical trials, chiropractic care either alone or as adjunctive to other interventions generated significantly higher satisfaction scores than comparator interventions. Interestingly most of the comparators where chiropractic care performed better were either some form of home exercise, medication or standard medical care. Where clinicians were involved in delivering substantive interventions such as forms of supervised exercise, chiropractic care either scored equal satisfaction or in one case less satisfaction. Furthermore, addition of chiropractic care to an existing treatment generated better satisfaction than the existing treatment alone. This was also seen in audits of chiropractic care and usual care where a package of manual care added to usual care generated significantly greater satisfaction than usual care plus medication (Amorin-Woods et al., 2016).

Table 2: Results from RCTs where satisfaction was measured with chiropractic care versus a comparator

Authors	Condition	Intervention (s)	Comparator (s)	Superior satisfaction with chiropractic care (√)		Notes
				Group comparisons	**Follow up (weeks)**	
Bronfort et al. (2011)	Chronic LBP	SMT	SET, HEA	SMT v HEA SMT v SET	4 (x) 12 **(√)** 26 (x) 52 (x) 4 (x) 12 (x) 26 (x) 52 (x)	*SET was superior to SMT in terms of satisfaction at week 4*
Bronfort et al. (2012)	Sub-acute NP	SMT	MED, HEA	SMT v MED SMT v HEA	12 **(√)** 26 **(√)** 52 **(√)** 12 **(√)** 26 **(√)** 52 **(√)**	
Bronfort et al. (2014)	Subacute and chronic back related leg pain	SMT+HEA	HEA	(SMT + HEA) v HEA	12 **(√)** 52 **(√)**	
Goertz et al. (2013)	Acute LBP	CMT+SMC	SMC	(CMT +SMC) v SMC	2 **(√)** 4 **(√)**	
Goertz et al. (2018)	LBP (any duration)	CMT+SMC	SMC	(CMT +SMC) v SMC	6 **(√)**	*Both study sites showed greater satisfaction with CMT*
Haas et al. (2018)	Chronic cervicogenic headache	MT	MLM	SMT6 v MLM SMT12 v MLM SMT18 v MLM	6 **(√)** 12 **(√)** 24 **(√)** 39 (x) 52 **(√)** 6 **(√)** 12 **(√)** 24 **(√)** 39 **(√)** 52 **(√)** 6 **(√)** 12 **(√)** 24 **(√)** 39 **(√)** 52 **(√)**	*SMT was delivered at a frequency of either 6, 12 or 18 times over 6-week period compared to MLM. Higher satisfaction was seen in more frequent SMT regimes (12 and 18)*
Leininger et al. (2014)	NP	SMT	MED, HEA	SMT v MED SMT v HEA	12 **(√)**, 52 **(√)** Information 12 **(√)**, 52 **(√)** general care 12 (x), 52 (x) Information 12 **(√)**, 52 **(√)** general care	*SMT had superior satisfaction concerning general care (including provider concern, quality of treatment recommendations, and overall care) and information provided (including cause, prognosis, activities to hasten recovery, and prevention). SMT had greater satisfaction concerning general care than home exercise. Satisfaction with general care had a stronger relationship with global satisfaction compared to satisfaction with information provided.*
Maiers, Bronfort, et al. (2014)	Sub-acute or chronic LBP	SMT+HE	HE, SRE+HE	(SMT+HE) v HE (SMT+HE) v (SRE+HE)	12 **(√)**, 52 **(√)** 12 (x), 52 (x)	
Schulz et al. (2019)	Chronic LBP	SMT+HEP	HEP, SEP+HEP	(SMT+HEP) v HEP (SMT+HEP) v (SEP+HEP)	12 **(√)**, 26 **(√)** 12 (x), 26 (x)	
Walker et al. (2013)	Spinal pain	SMT	Sham	SMT v Sham	2 **(√)**	*Awareness of treatment assignment and achieving minimally important improvement in pain intensity were associated with chiropractic treatment satisfaction*

HEA=Home exercise with advice, MED= Medication, SET= Supervised exercise therapy, SMC=Standard Medical Care, CMT = Chiropractic Manipulative Therapy, HE=Home Exercise, SRE= Supervised rehabilitative exercise, HEP= Home Exercise Program, SEP= Supervised Exercise Program, MLM= Minimal Light Massage, MT= Manual Therapy

In studies with multiple time points satisfaction levels persisted up to 52 weeks in comparison with control interventions. In one study comparing satisfaction against a sham for spinal pain, awareness of being assigned to the chiropractic group was associated with higher satisfaction scores. In another study exploring dose of chiropractic encounters all doses (once, twice or three times a week) generated higher satisfaction than light massage. Interestingly, the higher doses (twice and three times a week) were associated with higher satisfaction than the lowest dose. Finally, one study looked at subscales of satisfaction (satisfaction with information and satisfaction with general care). Where the control to chiropractic care was medication, satisfaction with information and general care were higher in the chiropractic group. But where comparison was with home exercise then satisfaction was only significantly higher for general care.

Outside of controlled trials a range of other methodologies have explored patient satisfaction with chiropractic care.

Three national surveys where chiropractors were compared to medical care were include in the review. Of these Houweling et al. (2015) reported a number of satisfaction metrics including satisfaction with care, satisfaction with results of care and associations with satisfaction scores and profession identity in the initial visit. Patients attending for chiropractic care were nearly twice as likely to be satisfied with the care received than those seen by medical doctors (OR: 1.79 (1.35-2.39)) and 1.5 times as likely to be satisfied with the results of care (OR: 1.52 (1.15-2.02)). Interestingly patients who initially consulted with MDs were significantly less likely to be satisfied with the care received and the results of care compared with those who initially consulted DCs (OR of 1.79 and 1.52, respectively). In another study exploring the impact of prior chiropractic care experience, Gaumer and Gemmen (2006) reported that patients who had some prior experience of chiropractic care compared to none were less satisfied with other health care providers (87.3% satisfaction compared to 97.3% respectively).

In a study exploring satisfaction in a large patient sample (n=12,170) of Medicare beneficiaries with a diagnosis of musculoskeletal disease visiting either private chiropractic care or medical care, those in the chiropractic group had higher satisfaction with follow-up after initial visit and with information provided about what was wrong with them (Weigel et al., 2014).

Patient preferences of treatment type and /or practitioner might reasonably be assumed to influence satisfaction when patients specifically make choices to consult one practitioner over another. Such suppositions were explored by Haas et al. (2005) where a cohort of patients were followed who chose chiropractic care compared to medical care. Here, patient satisfaction significantly favored DC care for acute and chronic patients with satisfaction scores of 86.4% for chronic patients and 90% amongst acute patients, whereas for MDs these scores were 71 and 76% respectively. Furthermore, using a health care attitudes scale, trust in chiropractors was around 95% in those patients choosing chiropractic care whereas this figure was around 60% in those choosing medical care. Additionally, confidence in the provider of choice was 83-93% and 61-75% for those choosing chiropractors and MDs respectively.

An in-depth exploration of satisfaction and quality judgements by Canadian patients (Crowther, 2014) explored the similarities and differences in satisfaction and dissatisfaction experiences of patients attending physicians and chiropractors. In this qualitative study a *Critical Incidence Technique* was employed to ascertain patients' recollections of

chiropractic and physician encounters using 5 specific questions concerning a time the patient had a satisfying/dissatisfying care experience, when this happened, what happened, circumstances leading up to this experience and elements that impacted the feeling of satisfaction/dissatisfaction with the encounter. In this way interviews concerning satisfying/dissatisfying chiropractic or physician care experiences were completed. These interviews generated a number of satisfying and dissatisfying domains including, time management, treatment outcomes, standards of practice, professional and practice attributes, cost, and gestalt experiences. Where there were marked differences, generally, chiropractic care was judged predominantly on treatment outcomes where high satisfaction was associated with positive outcomes and low satisfaction with less positive outcomes. These judgements interestingly were absent when looking at satisfaction with medical care where dissatisfaction centred around the lack of, or incorrect treatments. High quality judgments were associated with physician care primarily around the generation of a diagnosis and timely and appropriate referrals where low satisfaction was voiced for lack of HCP referral. On the other hand, for chiropractors, diversity of treatment options and the ability to handle multiple problems simultaneously generated high satisfaction. Interestingly cost was not a factor for dissatisfaction in chiropractic care despite patients attending for chiropractic care 5 times more often on average that seeing their physician. The authors conclude the findings have implications for practice and education and suggest that undergraduate education, curricula should be reviewed, and changes implemented that reflect enhanced training, skills, and knowledge around quality management including the capacity to monitor the quality of care in their practice settings and respond to same.

As an alternative to satisfaction Ryan et al. (2018) looked at patient complaints comparing chiropractic, physiotherapy and osteopathic settings in Australia. Here, chiropractors had significantly higher complaints than both osteopaths (3 times higher) and physiotherapists (6 times higher). Concerns around professional conduct accounted for half of all complaints with male practitioners, individuals over 65 years of age, and those practicing in metropolitan areas at higher risk of complaints. Interestingly, amongst chiropractors only, around 1 in 100 practitioners were subject to more than one complaint. However, this small group accounted for 36% of all complaints within the chiropractic profession suggesting that a small number of individuals significantly skew professional dissatisfaction from patients.

Factors impacting chiropractic patient satisfaction

Treatment outcomes and reactions were suggested to impact patient satisfaction scores. In qualitative interviews with patients receiving spinal manipulative therapy or exercises, some common determinants of satisfaction were perceived treatment effect, relating to change or progress, and changes in pain (Maiers, Vihstadt, et al., 2014). Similarly, negative treatment outcomes conversely influenced satisfaction with care. In a prospective cohort study following patients' outcomes following chiropractic care, patients had a mean score of 9.1 out of 10. Their satisfaction was negatively impacted if they perceived they had symptomatic reactions and were 19% more likely to report "poor" satisfaction (95% CI – 0.78 – 1.79) (Eriksen et al., 2011). These findings are similar with parental satisfaction with pediatric chiropractic care. There were moderate negative correlations between distress after care and parental satisfaction (-0.31) and moderate positive correlations between improvement scores and parental satisfaction (0.42) (Navrud et al., 2014).

Patient and clinician interaction was deemed an important factor impacting patient satisfaction. From qualitative interviews embedded in a randomised-controlled trial, content analysis was used to identify the common determinants of satisfaction (Maiers, Vihstadt, et

al., 2014). Patients in all three groups (spinal manipulative therapy, supervised exercise, and home exercise) felt that the interaction with clinicians and their attributes were an important determinant. They also noted important determinants of information regarding exercises, tailored care, and information on the cause, prevention and prognosis of the condition. These were noted by all three groups but were mentioned more frequently within the supervised exercise and home exercise groups (Maiers, Vihstadt, et al., 2014). In sport settings, where chiropractic care was delivered by students, satisfaction levels were statistically significantly linked to patients' ratings of their assessment ($p = 0.005$), the communication of the student ($p = 0.006$), their views of student competence ($p = 0.01$) and conduct of the student ($p = 0.036$) (Talmage et al., 2009).

In private chiropractic clinics in the U.S, chronic low back pain and neck pain patients' global ratings of their care were positively associated with the length of time they had been receiving chiropractic care prior to the study ($r = 0.07$; $P = <0.05$), length of time seeing the chiropractor in the study ($r = 0.09$; $P < 0.0001$), number of visits to the chiropractor in the study ($r = 0.05$; $P = <0.05$) (Hays et al., 2020). Previous experience of chiropractic care was associated with patient satisfaction levels in athletes receiving chiropractic care in sports settings (Talmage et al., 2009).

Patient experiences with chiropractic care

Stomski et al. (2019) conducted an observational study of 108 patients receiving care in a chiropractic teaching clinic setting in Australia using the *Consultation and Relational Empathy (CARE)* questionnaire. This instrument provides a method to score 10 domains (maximum score 50) centered around conceptualisation of empathy in health care consultations including, understanding the patients' feelings, perspectives, and situation; sharing such understanding and verifying its accuracy with the patient and using that understanding to inform the delivery of the healthcare being delivered (Mercer, Maxwell, Heaney, & Watt, 2004). During the chiropractic care received these authors reported high proportions of patients (88-97%) scoring "very good" or "excellent" responses across all 10 CARE items with a mean total score of 46.3 (SD = 5.0). In addition, almost half (45.4%) of the participants achieved the maximum CARE score. However, these authors suggest that likely skewing of these scores due to the nature of the student chiropractor patient encounter compared to a typical encounter in the wider community, particularly the markedly increased time student chiropractors spend with patients over 4 consultations compared to the average within private practice settings (195 min v 80 min).

Condition chronicity is a central factor driving costs through ongoing health care seeking (Emilson, Åsenlöf, Demmelmaier, & Bergman, 2020) and patients with symptoms that do not resolve often consult care outside of the traditional medical landscape. Foley et al. (2020) explored the perceived experience of patients presenting with chronic conditions to complementary medicine setting including chiropractic care compared to medical care. Using a cross sectional survey design, they used three scales to ascertain the degree of patient centeredness including, the Patient Centered Care Scale (PCCS), Perceived Provider Support Scale (PPSS) and Empowerment Scale. Generally in patients who consulted a chiropractor, the mean perceived support was higher when compared medical doctors, on all of the areas of both the PCCS including being seen and heard as a unique individual by my chiropractor, perception of the chiropractor having a full picture of me as an individual, that the chiropractor is really interested in finding and addressing my health problems, that the root causes of my problems are being identified and treated by my chiropractor, that the treatment is individualised for me by the chiropractor at each session,

that the chiropractor receives feedback from my body that guides treatment, that I know what to expect during treatment sessions and that the chiropractor teaches me ways to relieve symptoms myself. For the PPSS higher scores were also found for chiropractors compared to medical doctors around issues including caring, acceptance, personal attention, talking openly and trust.
Such positive care experiences were also reported by Stomski et al. (2019) where proportions of patients indicating 'no problem' as opposed to 'a problem' on the Picker Musculoskeletal Disorder Questionnaire (PMSDQ) exploring domains for perceived elements of care before the consultation, the consultation, the treatment, continuing care and overall impression were generally very high (68.6-99.1%). Where scores were lower than this, they centered around delays in being seen and explanations for delays, advice around self-help and adaption of family living situations and contact information in the case of anxieties about condition or treatments. For overall impression of care, very high proportions of patients scored 'no problem' in their perceptions of being treated with respect and dignity (98.0%) and the courtesy of the provider (99.0%).

Patient experiences are not universally positive however, with particular domains arising as less than ideal. In a cross-sectional survey of chiropractic patients in the UK, MacPherson et al. (2015) reported that despite chiropractic patients reported a high level of satisfaction with the benefits of their care, patients' expectations were least well met concerning having more information on the cost of the treatment plan at the first consultation and mismatched expectations concerning whether the chiropractor would be contacting the patient's general practitioner if necessary or referring to another healthcare practitioner which did not happen as frequently as expected. Finally, although there was a small difference of 3% between the expectation the chiropractor would talk about the possibility of adverse reactions and whether the chiropractor did discuss this issue, 13% of patients reported that this did not happen.

In qualitative work, patients valued their interaction with their chiropractor: "Everyone was always courteous, kind, friendly…willing to answer any questions" (Maiers et al., 2016). Participants appreciated being listened to and valued the opportunity to express their concerns. This was noted as important for patients throughout their lifespan, from children seeking chiropractic care and feeling their condition was being taken seriously (Hermansen & Miller, 2008) to older adults receiving care "She's been fantastic, very patient-oriented, very caring, takes time to listen, to any questions or concerns you have, and address them, takes the time (P44, Female, Age 70)" (Wells et al., 2020). Patients valued the professionalism of their practitioners, which they noted in the way chiropractors communicated with them. In general chiropractic practice (Myburgh et al., 2016) and following a randomised trial of chiropractic care (Wells et al., 2020) patients valued effective communication of their diagnosis and the treatment plan. This was also reflected in pregnant patients experiences of seeking chiropractic treatment, with participants noting their chiropractor explaining their condition, and involving the patient in developing a management plan "I think we sort of have more of a dialogue about what treatment options to pursue" (Sadr et al., 2012). Patients wanted help for their diagnosis and were appreciative of any individualized help advice including referrals to other healthcare professionals: "Very informative as far as what he said to me and what he did in the referrals he made, but it was all the referrals that's where I got my help" (Wells et al., 2020).

Participants from several studies noted the good relationship they had with their chiropractor. In patients receiving care for chiropractors in the Netherlands, patients used the WAV-12 to measure working alliance between the chiropractor and the patient (Lambers

& Bolton, 2016). Their mean score was 49.14 (SD 7.12) rated out of 60. The mean patient score, measured on a 1-5 likert scale was 4.09 (SD ±0.59), with 5 representing an optimal alliance (Lambers & Bolton, 2016). In a study comparing perceived support between chiropractic care and medical care, mean perceived support was higher for chiropractic care, this included components such as: practitioner caring about patient, practitioner accepting patient, trust for practitioner, talking openly with practitioner (Foley et al., 2020). Trust was also examined in chiropractic teaching clinics, with 84.3% of participants reporting trusting their student chiropractor. Elements of the therapeutic relationship were also noted in qualitative literature, with participants noting that compassion, enthusiasm, genuineness, and helpfulness were important for their relationship. "(Doctor) seemed to care about me as a person, not just as a study object, but as a person and knew what I was going through" (Wells et al., 2020).

Patient satisfaction with organisation of care

Included studies in this review exploring satisfaction and experiences of patients with chiropractic care also documented outcomes concerning general organisation issue with care most often waiting times, length of consultations, care delivery settings and costs. In a study by Brown et al. (2014) over a very large proportion either strongly agreed or agreed that they were satisfied with waiting times and the length of consultation times for chiropractors (92.9% and 94.6% respectively). Similarly, patients' expectations that their chiropractor would allow sufficient time for their consultation were substantively met with 97% indicated that this has happened (MacPherson et al., 2015) or that the consultation time was the right amount (84.5%) (Stomski et al., 2019). MacPherson et al. (2015) also reported that in terms of the clinical setting, more than 90% of patients' expectations and experiences corresponded. Indeed, in some areas, chiropractors exceeded their patients' expectations, for example by displaying information about their length of time in practice and about their special interests or additional skills.

Discussion of findings

Summary of findings

Chiropractic patients report high levels of satisfaction and positive experiences with their care. A range of studies and methodologies were included in this review with patients mostly seeking care for MSK based pain conditions. Around a quarter of studies were analysis of secondary outcomes in randomised trials with the remaining being prospective cohorts, surveys and qualitative work.

For satisfaction, clinical trials overwhelming reported higher ratings from patients receiving chiropractic care in comparison with other health interventions and these on the whole achieved statistical significance. Generally, where substantive clinician time or attention were involved, patients were more satisfied and this arose in both the quantitative and qualitative literature. Given that comparisons of chiropractic care were often with interventions limited in these aspects (Medical Doctors (MDs), medication, home exercise), this may impact the higher satisfaction scores seen. Satisfaction scores were also linked with prior experience of chiropractic care or patients' choices suggesting familiarity or *a priori* factors underpinning patient autonomy and degree of empowerment are important. Unsurprisingly there were a number of studies that indicated satisfaction was related to positive or otherwise outcomes or a sense of progression, although this was not universally the case. Finally, in a single qualitative study, in depth exploration of experiences with chiropractic and MD care uncovered markedly different factors that underpinned satisfying and unsatisfying recollections of care. For example, satisfaction with MDs was associated with correct diagnosis, timely treatment and ongoing referral to other health care settings. On the other hand, satisfaction these factors were not associated with chiropractic care which was more aligned with chiropractor's diversity of interventions and perception of the chiropractor's ability to handle multiple problems simultaneously. Such results may indicate that patients' expectations of care are quite different when visiting different health care professions and particularly that usual medical care is held to a higher standard but in different aspects. Interestingly cost was not a factor associated with satisfaction or dissatisfaction with chiropractic care, although in another study, lack of knowledge of upfront costs was associated with lower satisfaction scores.

As with satisfaction, studies measuring experiences used a variety of methods to understand the chiropractic patients journey through care, including quantitively, a number of validated instruments and qualitative explorations of the patients lived experience. Here again the literature suggests that chiropractic patients' experiences are more positive and across a number of important domains including empathy, patient centredness and perceived support when compared to MDs. This may reflect a more '*customer facing'* paradigm that dominates much of chiropractic practice globally but is unlikely to encompass the entirety of the explanation in other countries where medical care is also not free at point of delivery. Where experiences were less than optimal, information around costs, delays in being seen and explanations for such delays were noted, although in other studies looking at satisfaction, the process of care including waiting and treatment times were very positive. Importantly and consistently, patients noted good communication, being listened to, the development of a strong therapeutic relationship and key traits such as trustworthiness and caring as being central in underpinning positive experience.

Quality of included studies

Results of the quality assessment identified that reporting quality was mixed. The final score for each study could be transferred into a rating, marked from very poor to good. No studies were marked as very poor or poor as they all had somewhat clear overview, aims, data collection and analysis, and presentation of results. No papers were excluded during this process as it is argued that papers of low methodological quality still have the potential to be relevant to the review. The main methodological weaknesses identified were limited details on patient recruitment, patient consent, and the setting of chiropractic care. Within the quantitative studies, the main limitations were potential for respondent bias, and no details or limited details on generalisability. Within the qualitative studies, some studies talked about generalisability rather than transferability and provided indirect discussion of implications. Taking into consideration the implications of these methodological flaws, no findings were deemed inappropriate and all concepts from the studies were included in the synthesis.

Implications for further research, UK policy, and practice

Given a large number of studies in diverse settings and geographies, a range of quantitative methodological designs and supportive qualitative work all pointing strongly in the same direction it is unlikely that further studies concerning general satisfaction levels will change the overall positive conclusions. However, questions focused in understanding the 'why' as opposed to the fact that high satisfactions levels are reported, seem more pertinent going forward. For example, it is known that chronic pain patients can spend many months or even years seeking help without satisfaction from mainstream health care sources which at least for patients in countries providing services free or subsided at point of care, face long waits, minimal contact time with clinicians and poor experiences (Slade, Molloy, & Keating, 2009). In such negative experience laden circumstances, it might not be surprising that attending care in a private setting where clinicians may have more time to communicate and spend time caring, higher satisfaction levels are reported. In this case then, it is not clear, whether high satisfaction and good experiences are due to the chiropractic care itself or because of the relative experiences encountered in past health seeking activity. Furthermore, patient choice seems important in determining satisfaction levels and little is available outside of condition-based categorisation (Beliveau et al., 2017) within the literature that explores the underlying reasons for such choices in patients seeking and maintaining the use of chiropractic care.

Whilst patients overwhelmingly endorse the profession through self-reported satisfaction and experience, they are not the only societal stakeholder providing legitimisation of the chiropractic profession and the care it provides. There is a danger, at least at the level of the practitioner perhaps, that patients are perceived as the only important voice that impacts the legitimacy and future role of the profession, particularly as chiropractors overwhelming work alone or with other chiropractors. Here, their own professional voices and the voice of their patients dominate the conversational landscape as to how positively or otherwise the profession is seen. However, clearly the chiropractic profession sits in the wider societal milieu and attitudes and perceptions amongst other societal stakeholders are also important, particularly other health care professions and their representative bodies. Furthermore, in jurisdictions where universal or subsided health care is common, the

patients seen by chiropractors generally tend to be more affluent and educated (Sørensen, 2019) and less unwell (Field & Newell, 2016). This highlights the fact that the larger cohort of the more health challenged patient voice residing in national health systems may not be as well represented amongst those seeing chiropractors. Given health policies in such countries are parsed through the lens of the wider rather than narrower subpopulation needs, it is important to contextualise positive perceptions by chiropractic patients of the profession and its care provision, given this is a narrow patient group. Whilst there is a small amount of evidence that NHS patients have reported high satisfaction levels when referred into chiropractic care in the private setting (Field & Newell, 2016) it remains to be seen whether such positive perceptions would transfer to the wider health care seeking population. Here, the issue of cost barriers to a wide range of patients due to socioeconomic factors and the absence in many countries of the chiropractic profession from national health systems free at the point of care is likely to continue to skew the patient populations seen by chiropractors and the generalisability of these results.

On the other hand, the increasing contemporary emphasis on patient experience as markers of quality and value of clinical care delivered, as exemplified by the *'value-based care'* paradigm, forms the basis of a substantive positive platform through which to articulate the impact of chiropractic care in the light of the results presented here. The strong and consistent findings of high satisfaction and positive health care experiential journeys implies that patients assign high value to their experiences of care with their chiropractors and do so, often to a greater extent than when compared with medical care, although while holding the professions to somewhat different standards. Whilst clinical outcomes when comparing chiropractic care to other conservative approaches to managing spinal pain are often similar (Masaracchio et al., 2019; Rubinstein et al., 2019) satisfaction and experiential data are markedly superior and such findings should potentially find greater emphasis when describing and promoting the impact of the profession in the wider health care provision conversation.

Lastly it is important to reiterate that the satisfaction levels and positive patient experiences reported here were not associated with either technical or manipulative elements of the chiropractic encounter but more often than not with perceptions of good communication, good relationships, trust and care. Indeed a strong theme around the value of good communication was also found in a recent General Chiropractic Council survey of public perceptions of chiropractic care and chiropractors (General Chiropractic Council, 2021) There is ample evidence to suggest that such contextual elements are centrally important in generating positive outcomes (Ferreira et al., 2013; Lakke & Meerman, 2016) and it is important for the profession to continue to develop a more complete understanding concerning the entirety of the therapeutic encounter, including patient practitioner relationships, as centrally impactful in generating both clinical and experience related positive outcomes.

Conclusion

This review sought to understand the literature concerning satisfaction and experiences as reported by chiropractic patients undergoing chiropractic care. The overriding conclusion is that high and consistent levels of both satisfaction and positive experiences are widely reported in the literature. This was ostensibly independent of study design, presenting conditions, age groups and referral routes.

Where comparison was made against other health care interventions or professions, satisfaction was consistently higher for chiropractic care even when added to existing interventions where patients reported valuing the chiropractor's involvement. These perceptions persisted within studies that collected outcomes over extended periods

Factors associated with satisfaction included positive clinical outcomes although this was inconsistent and, in some studies, where clinical outcomes were also measured, there was often no correlation with levels of satisfaction, which remained high despite little clinical improvement. In terms of positive experiences, communication, good relationships, perceived support and caring were all important.

Generally, then, chiropractors are appreciated and valued by their patients who reliably, come away with positive experience and high levels of satisfaction. This is partially related to previous experience and choice, but is also seen in patients without previous contact with chiropractors. Where this does not happen, factors such as lack of information around costs and referral to the wider health care arena appear to be important.

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Appendices

Appendix A – Search Strategies

PUBMED	
1	Chiropractic [SH] OR Manipulation, Chiropractic [SH] OR Chiropract* [title/abstract]
2	Patient-centered care [SH] OR Patient satisfaction [SH] OR patient-centered [title/abstract] Or patient-centred [title/abstract] Or “patient satisfaction” [title/abstract] OR “patient preference” [title/abstract] OR “patient experience” [title/abstract] OR “personal experience” [title/abstract] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance” OR Therapeutic alliance [SH]
3	#1 AND #2
4	Limit – 2005 - 2020.

Cochrane	
1	Chiropractic [SH] OR Manipulation, Chiropractic [SH] OR Chiropract* [title/abstract]
2	Patient-centered care [SH] OR Patient satisfaction [SH] OR patient-centered [title/abstract] Or patient-centred [title/abstract] Or “patient satisfaction” [title/abstract] OR “patient preference” [title/abstract] OR “patient experience” [title/abstract] OR “personal experience” [title/abstract] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance” OR Therapeutic alliance [SH]
3	#1 AND #2
4	Limit – 2005 - 2020.

EMBASE	
1	Chiropractic [SH] Or Chiropractic manipulation [SH] OR Chiropract* [title] OR Chiropract* [abstract]
2	Patient satisfaction [SH] OR patient-centered [title] OR patient-centered [abstract] Or patient-centred [title] Or patient-centred [abstract] Or “patient satisfaction” [title] OR “patient satisfaction” [abstract] OR “patient preference” [title] OR “patient preference” [abstract] OR “patient experience” [title] OR “patient experience” [abstract]OR “personal experience” [title] OR “personal experience” [abstract] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance” OR Therapeutic alliance [SH]
3	#1 AND #2
4	Limit – 2005 - 2020.

CINHAL	
1	Chiropractic [SH] OR Manipulation, Chiropractic [SH] OR Chiropract* [title] OR Chiropract* [abstract]
2	Patient centered care [SH] OR Patient satisfaction [SH] OR patient-centered [title] OR patient-centered [abstract] Or patient-centred [title] Or patient-centred [abstract] Or “patient satisfaction” [title] OR “patient satisfaction” [abstract] OR “patient preference” [title] OR “patient preference” [abstract] OR “patient experience” [title] OR “patient experience” [abstract]OR “personal experience” [title] OR “personal experience” [abstract] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance” OR Therapeutic alliance [SH]
3	#1 AND #2
4	Limit – 2005 - 2020.

ICL	
1	Chiropractic [SH] OR Manipulation, Chiropractic [SH] OR Chiropractors OR Chiropract* [title] OR Chiropract* [abstract/notes]
2	Patient-centered care [SH] OR Patient satisfaction [SH] OR patient-centered [title] OR patient-centered [abstract] Or patient-centred [title] Or patient-centred [abstract] Or “patient satisfaction” [title] OR “patient satisfaction” [abstract] OR “patient preference” [title] OR “patient preference” [abstract] OR “patient experience” [title] OR “patient experience” [abstract] OR “personal experience” [title] OR “personal experience” [abstract] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance”
3	#1 AND #2
4	Limit – 2005 - 2020.

Web of Science	
1	Chiropract* [topic] OR chiropract* [title]
2	patient-centered [title] OR patient-centered [topic] Or patient-centred [title] Or patient-centred [topic] Or “patient satisfaction” [title] OR “patient satisfaction” [topic] OR “patient preference” [title] OR “patient preference” [topic] OR “patient experience” [title] OR “patient experience” [topic] OR “personal experience” [title] OR “personal experience” [topic] OR “patient reported experience measure” OR PREM OR “quality of care” OR “effective communication” OR respect OR dignity OR “emotional support” OR “therapeutic alliance”
3	#1 AND #2
4	Limit – 2005 - 2020.