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Acupuncture for Chronic Non-Cancer Pain: A Review of Clinical Effectiveness, Cost Effectiveness and Guidelines

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Abbreviations

ACER	Average Cost-Effectiveness Ratio
ACP	American College of Physicians
ACR/NPF	American College of Rheumatology / National Psoriasis Foundation
CanPain SCI	Canadian Pain: Spinal Cord Injury Working Group
CC	Cleveland (Ohio) Clinic Family Medicine Residency
CI	Confidence Interval
CrI	Credible Interval
CUA	Canadian Urological Association
EBG	Evidence-Based Guidelines
ES	Economic Studies
ICER	Incremental Cost-Effectiveness Ratio
KCE	Belgian Health Care Knowledge Centre
MA	Meta-Analyses
MD	Mean Difference
NIH-CPSI	National Institutes of Health - Chronic Prostatitis Symptom Index
NRS	Numerical Rating Scale
NS	Non-Randomized Study
NSAID	Nonsteroidal Anti-Inflammatory Drug
OPTIMa	Ontario Protocol for Traffic Injury Management Collaboration
PERG	Prostatitis Expert Reference Group
QALY	Quality-Adjusted Life-Year
RCT	Randomized Controlled Trial
SMD	Standardized Mean Difference
SR	Systematic Review
VA/DoD	Department of Veterans Affairs and the Department of Defense
VAS	Visual Analog Scale
WMD	Weighted Mean Difference
WOMAC	Western Ontario and McMaster Osteoarthritis Index

Context and Policy Issues

Chronic pain affects 20% of Canadians.[1] This persisting pain can negatively affect all aspects of a person's life. Thanks to the World Health Organization (WHO), global consensus is acknowledging chronic pain as a legitimate disease in its own right and not merely as a symptom of another disease.[1] Chronic pain persists or reoccurs for greater than three months, causes significant emotional distress, can emerge as a symptom of another disease but persist after that disease has been treated.[1]

However, chronic pain is difficult to manage due to the costs, addictiveness, and stigma surrounding pharmacological pain treatments, including opioids. Chronic pain, managed and unmanaged, also has direct costs on the community and healthcare system itself through loss of productivity.[1]

Acupuncture has been used for pain relief for thousands of years in China and may be a credible alternative to pharmacological treatments for people experiencing chronic pain, particularly when they are non-responsive or intolerant of usual care, or even want to avoid pharmacological treatment.[2]

The objective of this report is to summarize the evidence regarding the clinical and cost effectiveness of acupuncture for chronic non-cancer pain as well as relevant evidence-based guidelines regarding acupuncture for chronic non-cancer pain.

Research Questions

1. What is the clinical effectiveness of acupuncture for chronic non-cancer pain?
2. What is the cost effectiveness of acupuncture for chronic non-cancer pain?
3. What are the evidence-based guidelines regarding acupuncture for chronic non-cancer pain?

Key Findings

A total of 23 systematic reviews, one economic study, and nine evidence-based guidelines were identified regarding the clinical effectiveness, cost-effectiveness, and recommendations for the use of acupuncture (including electroacupuncture, dry needling, manual acupuncture, and warm needle acupuncture) in patients with a variety of chronic non-cancer pain conditions. The identified systematic reviews were largely considered to be high-quality, and most evaluated the clinical effectiveness of acupuncture in general compared with sham interventions or medications. When specified, the most common type of comparator medications was non-steroidal anti-inflammatory drugs (NSAIDs). Many systematic reviews suggested evidence of acupuncture effectiveness for decreased pain, with some additionally reporting no difference in adverse events between acupuncture and comparator groups, but the results were inconsistent overall and often varied depending on the patient population. Likewise, recommendations regarding acupuncture were conflicting depending on the guideline group. Six evidence-based guidelines provided recommendations of varying strengths for the use of acupuncture in several chronic pain conditions (including chronic low back pain, different types of arthritis, and other pain disorders), two guidelines did not provide recommendations for acupuncture in patients with chronic low back pain and spinal cord-related neuropathic injuries due to insufficient evidence, and one guideline recommended against acupuncture for neck pain and associated disorders due to evidence of no effectiveness. One economic evaluation conducted in Iran found that electropuncture had a lower average cost-effectiveness ratio than NSAIDs for patients with chronic low back pain. However, firm conclusions regarding the relative costs and benefits of electroacupuncture and NSAIDs cannot be drawn as the incremental cost-effectiveness ratio was not reported in this study.

Despite the number of high-quality systematic reviews and evidence-based guidelines identified regarding acupuncture for chronic non-cancer pain and their support for acupuncture, evidence demonstrating clinical effectiveness of acupuncture is limited because of the low-quality primary studies contributing to the evidence base. The STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture) criteria can be used while planning primary studies to increase the quality of these primary studies and to develop robust evidence. Additional high-quality economic studies conducted in Canada are also required to determine the cost-effectiveness of acupuncture for the treatment of chronic non-cancer pain in a Canadian context.

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were acupuncture and chronic pain. Search filters were applied to limit retrieval to health technology assessments (HTAs), systematic reviews (SRs), meta-analyses (MAs), or network meta-analyses (NMAs); economic studies (ESs); and evidence-based guidelines (EBGs). Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014 and September 19, 2019.

Selection Criteria and Methods

One reviewer screened citations and selected studies. In the first level of screening, titles and abstracts were reviewed and potentially relevant articles were retrieved and assessed for inclusion. The final selection of full-text articles was based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Adults living with chronic non-cancer pain, excluding pregnant patients.
Intervention	Acupuncture (all types of acupuncture, including but not limited to: traditional dry needling, electro-acupuncture, moxibustion acupuncture, magnetic acupuncture, bee venom acupuncture)
Comparators	Question 1: Pharmacological interventions No treatment (e.g., waitlist, sham interventions) Usual care (if usual care is pharmacological interventions only) Question 2: Pharmacological interventions No treatment (e.g., waitlist, sham interventions) Usual care (if usual care is pharmacological interventions only) Question 3: Not applicable
Outcomes	Question 1: Clinical effectiveness (e.g., pain reduction, functional performance, quality of life, disability level, safety, global impression of recovery, adverse events, skin reactions) Question 2: Cost effectiveness (e.g., incremental cost per quality adjusted life year gained, incremental cost-effectiveness ratio, quality adjusted life years) Question 3: Guidelines
Study Designs	Health Technology Assessments/Systematic Reviews/Meta-Analyses Economic Evaluations Evidence-Based Guidelines

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria outlined in Table 1, were duplicate publications, were not published in English, or were published prior to 2014. Guidelines with unclear methodology were also excluded.

Critical Appraisal of Individual Studies

The included systematic reviews (SRs), meta-analyses (MAs), or network meta-analyses (NMAs)[3-25] were critically appraised by one reviewer using AMSTAR II,[26] the economic study (ES)[27] was assessed using the Drummond checklist,[28] and the evidence-based guidelines (EBGs)[2,29-38] were assessed with the AGREE II instrument.[39] Summary scores were not calculated for the included studies; rather, a review of the strengths and limitations of each included study were described narratively.

Summary of Evidence

Quantity of Research Available

A total of 523 citations were identified in the literature search. Following screening of titles and abstracts, 325 citations were excluded and 198 potentially relevant reports from the electronic search were retrieved for full-text review. Six potentially relevant publications were retrieved from the grey literature search for full text review. Of these potentially relevant articles, 171 publications were excluded for various reasons, and 33 publications met the inclusion criteria and were included in this report. These comprised 23 systematic reviews,[3-25] one economic study,[27] and nine evidence-based guidelines.[2,29-36] Appendix 1 presents the PRISMA[40] flowchart of the study selection.

Summary of Study Characteristics

Additional details regarding the characteristics of included publications are provided in Appendix 2.

Study Design

Of the 23 included systematic reviews (SRs), 18 also contained meta-analyses (MAs),[8-25] and four also presented network meta-analyses (NMAs).[3-6] Seven were published in 2019,[3,7-12] three in 2018,[4,13,14] five in 2017,[5,15-18] five in 2016,[6,19-22] and three in 2015.[23-25] Only randomized controlled trials (RCTs) were included in each of the included systematic reviews, totalling 155 different RCTs published from 1975 to 2018. Additional details regarding the overlap of RCTs from included SRs are provided in Appendix 5.

The included economic study (ES) was a cross-sectional study conducted in 2018. It used a cost-utility analysis from the social perspective over a time horizon of six months in a study-based approach using inpatient medical records for direct costs and a friction cost approach for indirect costs.[27]

Of the nine included evidence-based guidelines (EBG), eight conducted systematic reviews to support recommendation development,[2,29-32,34-36] and one conducted a literature review but was unclear on whether it was systematic.[33] Study selection was performed in duplicate for three EBGs,[29,32,34] but unclear for six. [2,30,31,33,35,36]None of the included EBGs clearly described the data extraction methodology.[2,29-36] Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation

(GRADE),[29,30,32,33,36] Strength-of-Recommendation Taxonomy (SORT),[2] American College of Physicians' (ACP) guideline grading system,[31] Scottish Intercollegiate Guidelines Network (SIGN) criteria,[34] and Oxford Centre for Evidence-based Medicine (OCEBM) Levels of Evidence.[35] Strength of recommendations was rated using GRADE,[29,30,32,33,36] SORT,[2] ACP guideline grading system,[31] adapted National Institute for Health and Care Excellence Methodology,[34] or not rated.[35] Prior to publication, consensus on phrasing and strength of recommendations was achieved through various associated panels and groups,[29,32-36] or methodology was unclear.[2,30,31] Guidelines were validated through: patients,[29] peer review,[31] group representatives,[31,32] stakeholders,[32,34] clinicians,[32] and the public[34] or were not validated.[2,30,33,35,36]

Country of Origin

The majority of included SRs were produced in China,[3-6,9,11,12,16-19,22-25] a total of fifteen, followed by two from Korea,[14,15] two from Spain,[7,20] and one each from Argentina,[8] Brazil,[10] United States of America,[13] and Australia[21]

The included ES was conducted in Iran.[27]

Four of the included EBGs were designed for use in the United States of America,[2,29,31,36] three for Canada,[30,33,34] and one each for Belgium[32] and for the United Kingdom.[35]

Patient Population

The patient population was typically adults; however, fourteen SRs did not specify or report and age range.[3,4,6,8,9,12,13,15-20,24] Chronic non-cancer pain in the included SRs consisted of two SRs for plantar faciitits,[3,7] one SRs for chronic headache,[13] two SRs for fibromyalgia,[12,22] four SRs for primary dysmenorrhea,[14,16,17,21] one SR for stable angina pectoris,[9] two SRs for general osteoarthritis,[13,22] two SRs for knee osteoarthritis,[4,22] one SR for hip osteoarthritis,[22] three SRs for chronic prostatitis/chronic pelvic pain syndrome,[6,8,19] five SRs for myofascial pain syndrome,[5,10,20,22,24] one SR for sciatica,[23] four SRs for chronic low back pain,[11,13,22,25] one SR for chronic knee pain,[18] two SRs for chronic shoulder pain,[13,24] and five SRs for chronic neck pain.[13,15,22,24,25] Some SRs reported on more than one type of chronic pain.

Chronic non-cancer pain in the included ES was described as chronic low back pain. A total of 100 patients were recruited from hospitals and acupuncture clinics.[27]

The intended users of the EBGs were clinicians;[31,32,34] health care providers[29] or professionals;[35] family physicians,[2] general practitioners,[32] or primary care clinicians;[36] specialists in physical medicine,[32] rehabilitation specialists,[32] physiotherapists,[32] or rehabilitation health-care providers;[33] urologists; [30] pain therapists;[32] orthopedic surgeons;[32] neurosurgeons;[32] and psychologists;[32] as well as patients; [32] hospital managers;[32] and policy makers.[32]

The target populations for the EBGs were patients with chronic non-cancer pain: adults with chronic low back pain,[2,31,32] neuropathic pain after spinal cord injury,[33] neck pain,[2,34] knee osteoarthritis,[2] active psoriatic arthritis,[29] headache,[2] myofascial pain,[2] fibromyalgia,[2] or pain-predominant chronic multisymptom illness;[36] as well as men with chronic prostatitis / chronic pelvic pain syndrome,[35] or chronic scrotal pain.[30]

Interventions and Comparators

The intervention was some form of acupuncture in all included SRs,[3-25] ES,[27] and EBGs.[2,29-36] The length of sessions, number of sessions, and duration of treatment varied.

- Acupuncture[2,6,8,9,11-13,15,16,18,19,21-25,29-33,35,36]
  - An acupuncture needle is inserted into an acupoint
- Manual Acupuncture[4,5,12,14,21]
  - An acupuncture needle is inserted into an acupoint and manually manipulated
- Electroacupuncture[4,6,8,9,12,14,17,18,21,23,27,34,35]
  - An acupuncture needle is inserted into an acupoint and electrically stimulated
- Dry Needling[2,3,5,7,10,20,24]
  - An acupuncture needle is inserted into a trigger point
- Moxibustion[9] or Warm Needle Acupuncture[4,14]
  - An acupuncture needle is inserted into an acupoint and moxa is burned on the other end.

The comparators of interest varied across included publications. The length of sessions, number of sessions, and duration of treatment varied.

- Sham
  - Sham Acupuncture (at acupoints)[17,21]
  - Sham / Placebo Acupuncture (away from acupoints) [3,8,11,17,21]
  - Sham / Placebo / Simulated Acupuncture (location unspecified) [2,4-6,13,14,19,22,24,25,31,32,34-36]
  - Sham Electroacupuncture[12]
  - Sham Manual Acupuncture[12]
  - Sham Dry Needling[7,10,20,24]

- Medical Treatment[8] or Medications[6,9,12,18,19,25,31,36]
  - Antibiotics[6]
  - Alpha-Blockers[6]
  - Combined Oral Contraceptives[21]
  - Medications for Stable Angina Pectoris
    - Angiotensin-Converting Enzyme (ACE) Inhibitor
      - Captopril[9]
    - Beta-Blockers
      - Betaloc[9]
    - Calcium Channel Blockers[9]
    - Compound Danshen Pills[9]
    - Nitrate Drugs
      - Isosorbide Mononitrate (ISMN)[9]
    - Shanhaidan Capsules[9]
  - Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [14-16,21,27,31]
    - Aspirin (ASP)[9]
    - Diclofenac[21,23]
    - Etoricoxib[18]
    - Ibuprofen[18,21,23]
    - Indomethacin[21]
    - Prednisone[23]

- Waiting List[4,17]

Outcomes

In the SRs and EBGs, pain intensity was measured using:

- Visual Analog Scale (VAS) [3,5,7,10-12,14-18,20,23-25]
  - Validated, subjective measure of pain intensity
  - Level of pain is marked on a ten-centimetre line between “no pain” and “worst pain” such that higher measurements represent higher pain
  - Minimum clinically important difference: 1.3cm/1.4cm
- Numerical rating scale (NRS)[5,10,24]
  - Subjective measure of pain intensity
  - Level of pain is marked on a numeric rating scale between “no pain” and “worst pain” such that higher numbers represent higher pain
- Western Ontario and McMaster Osteoarthritis Index (WOMAC) pain score[4,18]
  - Subjective measure of pain
  - Level of pain is marked on five numeric rating scales between “none” and “extreme” such that higher numbers represent higher pain
- National Institutes of Health – Chronic Prostatitis Symptom Index (NIH-CPSI) [6,8,19,30,35]
  - Subjective measure of pain
  - Level of pain is determined by the answers to four questions on location, severity and frequency of pain such that higher numbers represent higher pain
  - Minimum clinically important difference: six-point decrease
- Pain intensity (not defined) [13,22,31,33]
- Pain (not defined) [21,29,32,34,36]
- Pain relief (not defined) [2,21,31]
- Angina relief (not defined)[9]

In the ES, cost-utility was calculated using:

- Utilities (quality of life) measured by the EQ-5D instrument[27]
- Average cost-effectiveness ratio (ACER)[27]
  - Ratio of costs to benefits for an individual intervention group, not relative to a comparator

Adverse events were also measured in three SRs[8,12,21] and two EBGs.[2,32]

Summary of Critical Appraisal

Additional details regarding the strengths and limitations of included publications are provided in Appendix 3.

Systematic Reviews (SRs), Meta-Analyses (MAs), and Network Meta-Analyses (NMAs)

PICO, Protocol, Study Design Selection, and Search Strategy

The research questions and inclusion criteria for all of the included SRs include the population, intervention, comparator, and outcomes of interest.[3-25] However, only six included a time-frame for follow-up. [3,8,17,22,24,25] Protocols were determined *a priori* for 12 SRs, where: research questions; search strategy; inclusion and exclusion criteria; risk of bias assessment; meta-analysis plan; and investigation of heterogeneity were all registered before the review was conducted. [5,7,8,10-14,18,19,21,22] One SR justified the selection of only RCTs in the inclusion criteria.[11] All included SRs searched two or more relevant databases and provided the key words or search strategy employed.[3-25] Trial or study registries, grey literature, and reference lists or bibliographies of included studies were additionally

searched in 12, [75,8-11,14,15,17,18,21,24]10, [75,7,8,10,17,18,21,23,24] and 12[5,6,8,9,11,13,15,17,18,21,22,25] SRs, respectively. Content experts were contacted for four SRs. [8,18,22,25] Either publication restrictions were justified or were not restricted in 19 SRs. [3,5,6,8,10-19,21-25] The search was not conducted within 24 months of review completion for one SR[13] and unclear in four SRs.[3,6,20,22]

These review characteristics limit bias in the research questions and inclusion criteria, protocol registration with explanations for any deviations, study design selection, and search strategy, all of which increase the confidence in the SR results. Limiting the search sources could also limit the scope of the review and potentially introduce publication bias and therefore decreasing confidence in the results.

Duplication of Study Selection and Data Extraction

Three SRs did not clearly describe duplication of study selection,[6,21,25] whereas eight SRs did not clearly describe duplication of data extraction. [3-5,9,11,13,14,21] These review characteristics could potentially introduce selection bias in terms of included studies and included results and therefore decrease confidence in the results.

Excluded and Included Studies

Three SRs[7,10,16] did not provide reasons for exclusion of studies which were screened in full-text form. The population,[17,22] intervention, [22]dosage of intervention, [3,9,20,22]comparator, [22]dosage of comparator, [3,9,20,22]outcome, [22]follow-up time-frame, [20,22]and study settings[5,9-11,13,16,17,22,23] of included studies were not described in some included SRs. These review characteristics could increase selection bias and heterogeneity into any proposed meta-analyses and therefore decrease confidence in the results.

Three SRs[8,12,21] provided the full list of excluded studies and all included SRs [3-25] included only RCT study designs, which increase confidence in the results.

Risk of Bias Assessment and Sources of Funding

One SR[13] did not assess the risk of bias from non-random allocation in its included RCTs. Four SRs[3,7,13,15] did not assess their included RCTs for risk of bias from the selection of the reported result from among multiple measurements or analyses of a specified outcome. Included studies' sources of funding were not provided in most of the included SRs. [3-7,9-20,22-25] Not providing a risk of bias assessment can affect the quality of the results and affect confidence in the results. Not providing funding information can introduce bias from external sources and thus decrease confidence in the results.

Meta-Analysis, Potential Impact from Risk of Bias on Meta-Analysis, Review Interpretation and Discussion of Results, Heterogeneity, Publication Bias, and Conflict of Interest

One SR did not combine its results in a meta-analysis without a justification.[7] All other SRs justified the combination of results with appropriate weighting techniques, heterogeneity adjustments, and investigation of heterogeneity.[3-6,8-25] To decrease the potential impact from risk of bias on meta-analysis, only low risk of bias RCTs were included in analysis or the possible effect of high risk of bias was analyzed and discussed, with investigation of any heterogeneity or publication bias.[3-6,8-25]

Economic Study (ES)

Study Design

The economic study was well-designed: clearly stated the research question and its economic importance; the rationale for selected interventions for comparison is clearly stated however, those interventions are not clearly described; the analysis viewpoint and form of economic evaluation are clearly stated and justified.[27] These study characteristics decrease bias in the design, execution, and analysis of the study and therefore increase the confidence in the results.

Data Collection

The economic study clearly stated the sources of effectiveness estimates used; design and results; primary outcome measure; methods to value benefits; and details of the subjects from whom valuations were obtained. Productivity changes were reported separately and their relevance to the study question was discussed. Quantities of resource use were reported separately from their unit costs, methods for the estimation of quantities and unit costs were described, currency and price data were recorded and details of currency of price adjustments for inflation or currency conversion were given.[27] These study characteristics decrease bias in the data collection of the study and therefore increase confidence in the results.

However, the model used was not clearly described or clearly justified, which could potentially introduce bias into the study and decrease confidence in the results.[27]

Analysis and Interpretation of Results

The economic study clearly stated the time horizon of costs and benefits; details of statistical tests and confidence intervals; relevant treatment alternatives; incremental analysis; and major outcomes as aggregated and disaggregated forms.[27] The answer to the study question was given in the conclusions, which followed from the data reported and was accompanied by the appropriate caveats.[27] These study characteristics decrease bias in the analysis and interpretation of the study results and therefore increase confidence in the results.

However, the discount rate was not applied, stated, or justified with no explanation of why it was not applied.The authors stated that an ACER was measured instead of an incremental cost-effectiveness ratio (ICER) because the ICER was negative, demonstrating dominance, whereas the ACER allowed for average cost per effect.[27] However, it has been suggested that the use of ACERs may be misleading as they cannot provide relative costs and benefits for the comparison of two interventions in the way that ICERs do.[41] These study characteristics could potentially increase bias in the analysis and interpretation of the study results and therefore decrease confidence in the results.

Evidence-Based Guidelines (EBGs)

Scope and Purpose

The scope and purpose of the guideline was clearly described in all included EBGs[2,29-36] as indicated by specific descriptions of the overall objectives, covered health questions, and target populations to whom the guideline is meant to apply. These guideline characteristics limit bias in the research questions and inclusion criteria, which increase the confidence in the EBG recommendations.

Stakeholder Involvement

The target users of the guidelines were clearly defined for all included RBGs[2,29-36] However two guidelines did not include individuals from all relevant professional groups in their guideline development groups,[2,30] and nearly half did not seek the views and preferences of their target population,[2,30,33,35] which could decrease the generalizability of the guidelines because several potentially relevant perspectives were not consulted and also decrease confidence in the recommendations.

Rigour of Development

The included EBGs were fairly rigorously developed through: systematic methodology for collecting evidence; explicit links between that evidence and the formulated recommendations; clear descriptions of the strengths and limitations of the body of evidence; and consideration of the health benefits, side-effects, and risks of treatment in the formulated recommendations.[2,29-36] These guideline characteristics strengthen the rigour of the guidelines and thus increase confidence in the recommendations.

One guideline suggested but did not clearly state that systematic methods were used to search for evidence.[33] Two EBGs did not clearly describe the inclusion criteria, the methods used to formulate the guidelines, or a procedure for updating the guidelines.[2,30] Another guideline also did not clearly describe the inclusion criteria.[33] Nearly half of the included EBGs did not consult experts for external review prior to publication.[2,30,33,36] These guideline characteristics could introduce selection bias and thus decrease confidence in the recommendations.

Clarity of Presentation

The included EBGs were all clearly presented as indicated by specific and unambiguous recommendations which take into account different options for treatment and management of the relevant condition or health issues with key recommendations easily recognizable.[2,29-36] These guideline characteristics increase confidence in the recommendations.

Applicability

All included EBGs presented auditing or monitoring criteria.[2,29-36] One guideline did not describe facilitators and barriers to its application or provide advice on how the recommendations could be put into practice because the guideline was developed for the government of Ontario, who is the appropriate body to determine the applicability of the recommendations.[34] These guideline characteristics increase the applicability of the included guidelines and thus increase confidence in their recommendations.

However, over half of the included EBGs did not consider the potential resource implications of applying their recommendations, which may decrease the feasibility of implementing their recommendations.[30,33-36]

Editorial Independence

Nearly half of the included EBGs were not clear about the influence of the funding bodies on the content of the guidelines.[2,29,30,36] Competing interests of guideline development group members were either not recorded or did not address how those interests were managed in three EBGs.[2,30,36] These guideline characteristics could introduce bias through subjective opinions that could be influenced by external sources and therefore decrease confidence in the recommendations.

Summary of Findings

Appendix 4 presents tables of the main findings and authors' conclusions.

Clinical Effectiveness of Acupuncture for Chronic Non-Cancer Pain

Acupuncture

For Chronic Prostatitis/Chronic Pelvic Pain Syndrome, two SRs[8,19] with four relevant RCTs[42-45] reported that acupuncture significantly decreased pain intensity when compared with sham. One SR[8] with three relevant RCTs[42-44] found that acupuncture was not significantly different in terms of adverse events (low quality of evidence) when compared with sham. Two SRs[8,19] with four relevant RCTs[43,45-47] suggested that acupuncture significantly decreased pain intensity when compared with medications. One SR[8] with three relevant RCTs[43,46,47] found that acupuncture was not significantly different in terms of adverse events (low quality of evidence) when compared with medication.

For Osteoarthritis, two SRs[13,22,48] with ten relevant RCTs[49-58] reported that acupuncture significantly decreased pain when compared with sham.

For Knee Osteoarthritis, two SRs[4,22] with fifteen relevant RCTs[49-55,59-66] stated that acupuncture significantly decreased pain intensity when compared with sham. Also, one SR[4] with one relevant RCT[67] reported that acupuncture significantly decreased pain intensity when compared with waiting list.

For Hip Osteoarthritis, one SR[22] with one relevant RCT[68] suggested that acupuncture significantly decreased pain intensity when compared with sham.

For Myofascial Pain, one SR[22] with thirteen relevant RCTs[69-81] reported that acupuncture significantly decreased pain intensity when compared with sham.

For Chronic Shoulder Pain, one SR[13,48] with four relevant RCTs[82-85] maintained that acupuncture significantly decreased pain when compared with sham.

For Sciatica, one SR[23] with three relevant RCTs[86-88] reported that acupuncture significantly decreased pain intensity when compared with sham.

For Chronic Low Back Pain, three SRs[11,22,25] with thirteen relevant RCTs[89-99] suggested that acupuncture significantly decreased pain intensity when compared with sham. Also, one SR[25] with six relevant RCTs[100-105] found that acupuncture had no significant difference in pain intensity when compared with medication.

For Chronic Neck Pain, two SRs[22,25] with eight relevant RCTs[78,106-112] reported that acupuncture significantly decreased pain intensity when compared with sham. Also, one SR[15] with one relevant RCT[113] suggested that acupuncture had no significant difference in pain intensity when compared with NSAIDs (moderate quality of evidence). One SR[25] with four relevant RCTs[78,100,101,114] reported that acupuncture significantly decreased pain intensity when compared with medication immediately after treatment.[25]

For Chronic Knee Pain, one SR[18] with one relevant RCT[67] reported that acupuncture significantly decreased pain intensity after four, eight, and twelve weeks when compared with medication.

For Fibromyalgia, one SR[12] with two relevant RCTs[115,116] reported that acupuncture significantly decreased pain intensity immediately after treatment (moderate quality of

evidence) and at least three months after treatment (low quality of evidence) when compared with sham. However, another SR[22] with five relevant RCTs[117-121] found acupuncture had no significant difference in pain intensity when compared with sham. Also, one SR[12] with two relevant RCTs[115,116] discovered that acupuncture significantly decreased pain intensity immediately after treatment (very low quality of evidence) and at least three months after treatment when compared with medication.

For Primary Dysmenorrhea, one SR[21] with three relevant RCTs[122-124] reported that the comparison of acupuncture versus sham could not be calculated because the data was unsuitable for calculation of means (low quality of evidence) and no studies reported adverse events. Additionally for Primary Dysmenorrhea, two SRs[16,21] with twelve relevant RCTs[125-136] reported that acupuncture had no significant difference in pain intensity when compared with NSAIDs. Also, one SR[21] with ten relevant RCTs[125-134] found that acupuncture significantly increased pain relief and decreased adverse events when compared with NSAIDs.[21] However, one SR[21] with one relevant RCT[137] reported that acupuncture had no significant difference in pain relief or adverse events when compared with Combined Oral Contraceptives.

For Chronic Headache, one SR[13,48] with five relevant RCTs[138-142] suggested that acupuncture significantly decreased pain when compared with sham.

For Stable Angina Pectoris, one SR[9] with seven relevant RCTs[143-149] reported that acupuncture significantly lowered incidence of ineffective angina relief when compared with medicine.

Electroacupuncture

For Chronic Prostatitis/Chronic Pelvic Pain Syndrome one SR[6] with two relevant RCTs[43,47] suggested that electroacupuncture significantly decreased pain intensity when compared with sham.

For Knee Osteoarthritis, one SR[4] with five relevant RCTs[49,50,57,61,150] reported that electroacupuncture significantly decreased pain intensity when compared with sham.

For Chronic Knee Pain, one SR[18] with two relevant RCTs[150,151] reported that electroacupuncture significantly decreased pain intensity after four weeks when compared with NSAIDs.

For Fibromyalgia, one SR[12] with two relevant RCTs[120,152] found that electroacupuncture significantly decreased pain intensity immediately after treatment (low quality of evidence) and was not significantly different after at least three months after treatment (low quality of evidence) when compared with sham.

For Primary Dysmenorrhea, electroacupuncture significantly decreased pain intensity when compared with sham.[14,17] Also, electroacupuncture significantly decreased pain intensity when compared with waiting list.[17] Additionally, electroacupuncture significantly decreased pain intensity when compared with no treatment.[17]

Dry Needling

For Plantar Fasciitis, one SR[3] with two relevant RCTs[153,154] found that dry needling had no significant difference in pain intensity when compared with sham at one month and three months post-treatment.

For Myofascial Pain Syndrome, two SRs[10,20] with seven relevant RCTs[69,70,74,79,155-157] reported that found that dry needling had no significant difference in pain intensity when compared with sham, one SR[5] with five relevant RCTs[69,70,74,156,158] found dry needling significantly decreased pain intensity when compared with sham, and another SR[24] with eleven relevant RCTs[69,72-74,108,112,156,159-162] discovered dry needling significantly decreased pain intensity in the short- and medium- term but not long-term when compared with sham. Also, one SR[5] with five relevant RCTs[69,70,74,156,158] reported that dry needling significantly decreased adverse events (not otherwise described) when compared with sham.

Manual Acupuncture

For Fibromyalgia, one SR[12] with seven relevant RCTs[118,121,163-167] suggested that manual acupuncture significantly decreased pain intensity immediately after treatment (moderate quality of evidence) and at least three months after treatment (very low quality of evidence) when compared with sham.

For Primary Dysmenorrhea, one SR[14] with five relevant RCTs[132,136,168-170] found that manual acupuncture was not associated with significant differences in pain intensity at one day and one menstrual cycle, but significantly decreased pain intensity at three menstrual cycles when compared to NSAIDs.

For Myofascial Pain Syndrome, one SR[5] with six relevant RCTs[72,75,171-174] reported that manual acupuncture had no significant difference in pain intensity when compared with sham.

Warm Needle Acupuncture

For Knee Osteoarthritis, one SR[4] with one relevant RCT[175] discovered that warm needle acupuncture significantly decreased pain intensity when compared with waiting list.

For Primary Dysmenorrhea, one SR[14] with three relevant RCTs[176-178] reported that warm acupuncture significantly decreased pain intensity when compared with NSAIDs.

Cost Effectiveness of Acupuncture for Chronic Non-Cancer Pain

Electroacupuncture

For Chronic Low Back Pain, one cost-utility analysis of 100 patients found that the ACER for NSAIDs was higher than the ACER for electroacupuncture, which suggests that NSAIDs cannot dominate electroacupuncture. The authors further suggested that the ICER of electroacupuncture versus NSAIDs would be negative, implying dominance of electroacupuncture over NSAIDs, given the observed higher utility and lower mean costs in the electroacupuncture group compared with the NSAID group.[27] However, the calculated ICER was not presented; therefore, no firm conclusions can be made regarding the relative cost-effectiveness of electroacupuncture and NSAIDs for patients with Chronic Low Back Pain.

Guidelines

Acupuncture

The Prostatitis Expert Reference Group recommends that treatment with acupuncture may be considered for Chronic Prostatitis/Chronic Pelvic Pain Syndrome based on level 5 evidence.[35]

The Canadian Urological Association supports a grade D recommendation that acupuncture may be safe and efficacious for Chronic Scrotal Pain based on level four evidence.[30]

The American College of Rheumatology / National Psoriasis Foundation recommends acupuncture over no acupuncture for Active Psoriatic Arthritis, based on very-low-quality evidence, but also conditionally supports no acupuncture over acupuncture due to associated costs.[29]

The Cleveland (Ohio) Clinic Family Medicine Residency recommends acupuncture over sham acupuncture in the short-term for Knee Osteoarthritis based on inconsistent or limited-quality patient-oriented evidence (level B), but also notes that both acupuncture and sham acupuncture have clinically significant effects.[2]

The Canadian Pain: Spinal Cord Injury Working Group recommends further research for Neuropathic Pain related to Spinal Cord Injury due to conflicting evidence.[33]

The Cleveland (Ohio) Clinic Family Medicine Residency recommends acupuncture over sham acupuncture in the short-term for Chronic Low Back Pain based on consistent, good-quality patient-oriented evidence (level A), but also notes that both acupuncture and sham acupuncture have large placebo effects.[2] The American College of Physicians supports a strong recommendation for treatment of chronic back pain with acupuncture based on moderate-quality evidence.[31] However, the Belgian Health Care Knowledge Centre did not formulate a recommendation due to insufficient evidence of potential benefits and harms to either recommend or not recommend.[32]

The Department of Veterans Affairs and the Department of Defense recommends acupuncture over sham acupuncture and over conventional medicine for Pain-Predominant Chronic Multisymptom Illness based on weak evidence.[36]

The Cleveland (Ohio) Clinic Family Medicine Residency suggests that acupuncture as safe and well-tolerated with few serious adverse events (occurring once in 100,000 needles inserted) based on consistent, good-quality patient-oriented evidence (level A).[2]

The Cleveland (Ohio) Clinic Family Medicine Residency recommends acupuncture for reduction of chronic daily idiopathic or tension headaches and episodic migraines based on consistent, good-quality patient-oriented evidence (level A).[2]

Electroacupuncture

The Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration does not recommend treatment with electroacupuncture over simulated acupuncture for Chronic Neck Pain, due to evidence of no effectiveness.[34]

Dry Needling

The Cleveland (Ohio) Clinic Family Medicine Residency recommends dry needling in the short-term for pain relief for Myofascial Pain Syndrome based on inconsistent or limited-quality patient-oriented evidence (level B).[2]

Limitations

While the included systematic reviews and evidence-based guidelines were relatively high quality, many contained few high-quality primary studies and many low-quality primary studies. This abundance of primary studies which are methodologically flawed leads to a high risk of bias – through non-randomized or unconcealed allocation; lack of blinding or maintenance; underpowered; heterogeneous population or treatment; non-standardized additional treatments; or even insufficient reporting of risk of bias items to allow risk of bias assessment. The lack of quality control measures makes it difficult to rule out the possibility of selective, implementation, and measurement biases. Any gaps and quality issues are transferred from the primary studies to the systematic reviews and evidence-based guidelines.

One ES conducted in Iran was identified for inclusion in this review. ESs from outside of Canada may be less applicable within Canada because costs can be quite variable depending on the country and how their healthcare system is set up.

Acupuncture can be difficult to blind, but the patients and outcome assessors should still be blinded. This problem with blinding is encountered in most studies on non-pharmacological interventions and how those studies deal with blinding might serve as inspiration for improving blinding in acupuncture studies. An additional feature of future studies could also include a measure to test the maintenance of the blinding after the trial has been conducted. Using placebo or sham acupuncture poses some additional considerations because they may stimulate cutaneous touch receptors, skin nociceptors, or psychological effects of treatment themselves, which can affect any comparisons.

To decrease selective reporting and incomplete outcome reporting, among others, trials should be prospectively registered. While the CONSORT (Consolidated Standards of Reporting Trials) statement,[179] the STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture) criteria,[180] and Cochrane's Risk of Bias (RoB) tools[181] are technically designed for reporting of trials, they may also be useful tools for designing high-quality trials prior to registration.

The population and setting may also limit the generalizability of these findings, while these publications were in English, the populations from the primary studies were mostly Chinese. Since acupuncture originated in China, these patients may enter these studies with different expectations of treatment effect, preconceptions, and familiarity with acupuncture depending on their culture than in other countries.[22] Pain is a subjective outcome and can be affected by expectations and preconceptions regarding treatment. Acupuncture practitioners trained in China may also have different skillsets than practitioners trained elsewhere.[22]

Interventions and comparators in both primary studies and systematic reviews lacked description, standardization and validation. Specific to acupuncture are placement of needle as well as frequency, duration and depth of treatment – including temperature for warmed needles.

Outcomes also lacked standardization, clinical validation, length of appropriate follow-up, and minimum clinically important difference. In these studies, treatment was for chronic pain but rarely included long-term follow-up. Subjective measures were mainly used, but some still need to be validated for proper use in these studies.

Conclusions and Implications for Decision or Policy Making

A total of 23 SRs,[3-25] one ES,[27] and nine EBGs[2,29-36] were identified regarding the clinical effectiveness, cost-effectiveness, and recommendations for the use of acupuncture in patients with a variety of chronic pain conditions. Most identified SRs evaluated the clinical effectiveness of acupuncture in general compared with sham interventions or medications, and many suggested evidence of effectiveness, but the SR results and recommendations from EBGs overall were variable depending on the patient population.

Acupuncture was supported for decreased pain intensity in chronic prostatitis/chronic pelvic pain syndrome, chronic headache, chronic neck pain, chronic shoulder pain, sciatica, myofascial pain, hip osteoarthritis, knee osteoarthritis, and osteoarthritis when compared to sham by two, one, two, one, one, one, one, two, and two SRs, respectively. Similarly, acupuncture decreased pain intensity in patients with knee osteoarthritis when compared with waiting list in one SR. In addition, for chronic prostatitis/chronic pelvic pain syndrome, one SR found no difference in adverse events between acupuncture and sham, and the Prostatitis Expert Reference Group suggested consideration of acupuncture as a treatment option for this patient population. Acupuncture is weakly recommended as a treatment for chronic scrotal pain by the Canadian Urological Association, for Pain-Predominant Chronic Multisymptom Illness by the Department of Veterans Affairs and the Department of Defense as well as for knee osteoarthritis and chronic headache by the Cleveland (Ohio) Clinic Family Medicine Residency. The American College of Rheumatology / National Psoriasis Foundation weakly recommends acupuncture over no treatment for active psoriatic arthritis.

For other pain conditions, the evidence regarding the clinical effectiveness of acupuncture relative to sham interventions was mixed. In patients with fibromyalgia, pain intensity results in a comparison between acupuncture and sham were conflicting, with one SR supporting acupuncture over sham therapy and another finding no difference between groups. One SR did not calculate the comparison between acupuncture and sham for pain intensity in primary dysmenorrhea because of unsuitable data. Chronic low back pain is another area of conflict in acupuncture, with three SRs supporting acupuncture, and the Cleveland (Ohio) Clinic Family Medicine Residency guideline and the American College of Physicians strongly recommending acupuncture, but the Belgian Health Care Knowledge Centre guideline found insufficient evidence of harm or benefit the generate a recommendation. The Canadian Pain: Spinal Cord Injury Working Group recommends further research due to conflicting evidence.

Compared with medications, acupuncture was supported for decreased pain intensity in patients with chronic neck pain, chronic knee pain, fibromyalgia, and chronic prostatitis/chronic pelvic pain syndrome by one, one, one, and two SRs, respectively. Furthermore, one SR found no difference between acupuncture and medications in terms of adverse events for chronic prostatitis/chronic pelvic pain syndrome. Acupuncture when compared with medications was also supported for angina relief of stable angina pectoris by one SR. However, pain intensity of chronic low back pain was no different between acupuncture and medications as found by one SR. Some SRs reported on comparisons of acupuncture with specific medications or classes of medications, with varying results. One

SR found no difference in pain intensity between acupuncture and NSAIDs for chronic neck pain. The effect on primary dysmenorrhea pain between acupuncture and NSAIDs was conflicting, with one SR supporting acupuncture and two reporting no difference between groups. The relative safety of acupuncture for patients with primary dysmenorrhea pain was also variable; one SR found that acupuncture had decreased adverse events in a comparison with NSAIDs, while another SR found no difference in adverse events between acupuncture and combined oral contraceptives. One EBG produced by the Department of Veterans Affairs and the Department of Defense recommends acupuncture over medications for pain-predominant chronic multisymptom illness.

The clinical effectiveness of electroacupuncture compared with no active therapy or medications for the treatment of chronic pain was evaluated in 10 SRs. Electroacupuncture for decreased pain intensity was supported for chronic prostatitis/chronic pelvic pain syndrome, knee osteoarthritis, and fibromyalgia when compared to sham by one SR each. However, for fibromyalgia pain intensity was no different from sham after three months. Electroacupuncture was supported versus waiting list, no treatment, and sham, for decreased pain intensity in primary dysmenorrhea by one, one, and two SRs, respectively. When compared with NSAIDs, one SR found that electroacupuncture was associated with decreased pain intensity in patients with chronic knee pain, and one ES found that electroacupuncture had a lower ACER for patients with chronic low back pain. However, firm conclusions regarding the relative costs and benefits of electroacupuncture and NSAIDs cannot be drawn as the ICER was not reported in this ES. In addition, the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration does not recommend treatment with electroacupuncture over simulated acupuncture for chronic neck pain, due to evidence of no effectiveness.

Dry needling for decreased pain intensity was not supported for plantar fasciitis when compared to sham by one SR. Dry needling when compared to sham for decreased pain intensity had conflicting evidence for myofascial pain syndrome – two SRs found no difference; two more found a difference in favour of dry needling in the short term, but not the long-term; and the Cleveland (Ohio) Clinic Family Medicine Residency guideline recommends dry needling as treatment. Another SR also reported fewer adverse events from dry needling than sham.

Some SRs also evaluated other acupuncture modalities, including manual acupuncture and warm needling; however, no ESs or EBGs specifically addressed these types of acupuncture. Manual acupuncture when compared to sham in patients with fibromyalgia was supported in one SR for decreased pain intensity immediately and also three months after treatment. Pain intensity for myofascial pain syndrome was no different between manual acupuncture and sham acupuncture in one SR. Another SR supported manual acupuncture over NSAIDs for decreased pain intensity of primary dysmenorrhea after three menstrual cycles, but not before. Warm needle acupuncture for decreased pain intensity was supported for knee osteoarthritis and primary dysmenorrhea versus waiting list and NSAIDs, respectively, by one SR each.

Despite the number of high-quality systematic reviews and guidelines identified on acupuncture for chronic non-cancer pain and their support for acupuncture, evidence demonstrating clinical effectiveness of acupuncture is limited because of the low-quality primary studies supporting that evidence. Any gaps in the evidence or bias within the primary studies will still be present when the primary studies are aggregated and summarized in a SR or EBG. Therefore, while many guidelines recommend acupuncture for

the treatment of chronic pain, the strength of those recommendations was also variable depending on the quality of the evidence base for the specific types of acupuncture and patient population evaluated. Most comparisons were based on one or two primary studies with wide intervals (low precision of results) and the results may change with further research and the addition of new primary studies. The STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture) criteria can be used while planning primary studies to increase the quality of these primary studies and to develop robust evidence.[180] Additional high-quality ESs conducted in Canada are also required to determine the cost-effectiveness of acupuncture for the treatment of chronic non-cancer pain in a Canadian context.

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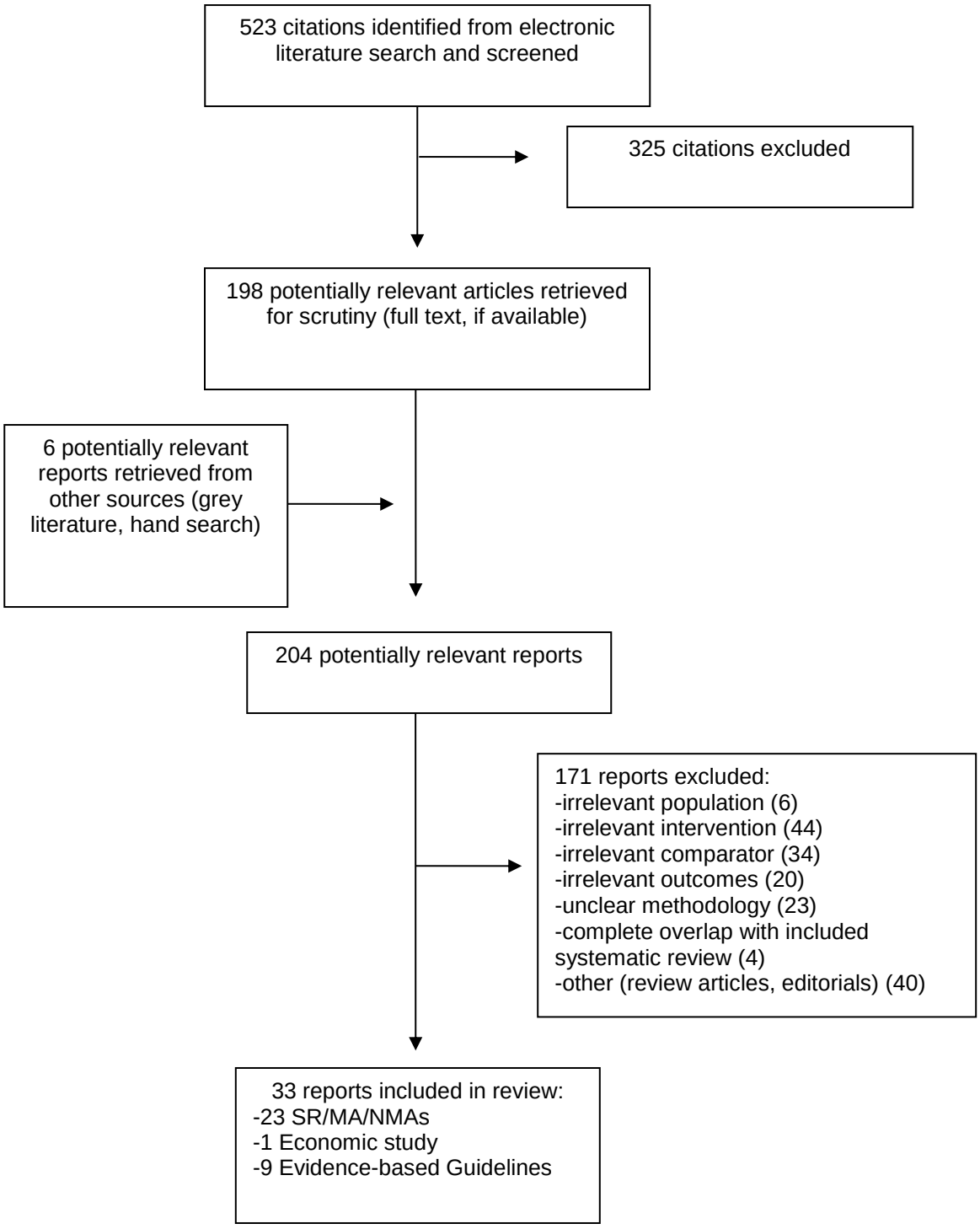
Appendix 1: Selection of Included Studies



Appendix 2: Characteristics of Included Publications

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Al-Boloushi et al, 2019[7] Country: Spain	Study Design: - SR Date Range: - January 2000 to March 2017 Relevant Primary Studies: - One of 29 RCTs for dry needling[182]	Inclusion: - Adult patients (eighteen years or older) - Diagnosis of non-acute (greater or equal to four weeks duration) plantar fasciitis (or equivalent terms such as fasciosis or fascitis or heel pain) Exclusion: - Diabetes, spasticity, neuropathy, tumour, fracture, haemophilia, stroke, amputation, artificial limbs and rheumatoid arthritis - Pediatric populations - Animal populations	Intervention: - Dry Needling[182] o Not described Comparator: - Sham Dry Needling[182] o Not described	- First step in the morning pain using the Visual Analog Scale (VAS) a o Follow-up of 2,4,6, and 12 weeks o Minimum clinically important difference not reported - Foot Pain using the Foot Health Status Questionnaire (FHSQ) o Follow-up of 2,4,6, and 12 weeks o Minimum clinically important difference not reported
Franco et al, 2019[8] Countries: Argentina, Syrian Arab Republic, Korea, China, Norway	Study Design: - SR/ MA Date Range: - Inception to August 2017 Relevant Primary Studies: - Five of 38 RCTs for acupuncture[42,44,46,47] - One of 38 RCTs for electroacupuncture[43]	Inclusion: - Men of all ages - Diagnosis of type III chronic prostatitis/chronic pelvic pain syndrome as classified by the National Institutes of Health (NIH) - No restrictions on social status or ethnic origin	Interventions: - Acupuncture[42,44,46,47] o Descriptions varied - Electroacupuncture[43] o Descriptions varied Comparators: - Sham Acupuncture (needle insertions away from acupoints, no electric stimulation)[42-44] o Descriptions varied - Medical Treatment[43,46,47] o Descriptions varied	- Prostatitis Symptoms using the National Institutes of Health – Chronic Prostatitis Symptom Index (NIH-CPSI) o Follow-up of 6 and 8 weeks o Minimum clinically important difference of a six-point-decrease in the total NIH-CPSI score - Adverse Events (not defined) o Length of follow up not reported o Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Li et al, 2019[3] Country: China	Study Design: - SR/ NMA Date Range: - Unclear Relevant Primary Studies: - Two of 41 RCTs[153,154]	Inclusion: - Age range not specified - Diagnosis of plantar fasciitis	Intervention: - Dry Needling[153,154] o Descriptions varied Comparator: - Placebo[153,154] o Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) o Follow-up of one, two, three, and six months o Minimum clinically important difference not reported
Liu et al, 2019[9] Country: China	Study Design: - SR/ MA Date Range: - 1959 to February 2018 Relevant Primary Studies: - Seven of 12 RCTs[143-149]	Inclusion: - Age range not specified - Diagnosis of stable angina pectoris	Interventions: - Acupuncture o Acupuncture[143-145,147,149] • Descriptions varied o Electroacupuncture[146] • Descriptions varied o Moxibustion[148] • Descriptions varied Comparators: - Medicine o Isosorbide, mononitrate (ISMN)[143,144,147-149] • Descriptions varied o Betaloc[144,147,149] • Descriptions varied o Shanhaidan Capsules (SHC)[145] • Descriptions varied o Compound Danshen Pills (CDP)[146] • Descriptions varied o Aspirin[147-149] • Descriptions varied	- Angina Relief (not defined) o Length of follow up not reported o Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
			○ Calcium Channel Blockers (CCB)[148] • Descriptions varied ○ Captopril[149] • Descriptions varied	
Vier et al, 2019[10] Country: Brazil	Study Design: - SR/ MA Date Range: - Inception to April 2018 Relevant Primary Studies: - Two of five RCTs[70,79]	Inclusion: - Adult patients (aged 18 to 65 years) - Diagnosis of orofacial myofascial pain Exclusion: - Diagnosis of neurologic, rheumatic, vascular, metabolic or neoplastic diseases - The involvement of surgical procedures in the orofacial region	Intervention: - Dry needling[70,79] ○ Descriptions varied Comparator: - Sham Dry Needling[70,79] ○ Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) or Numeric Rating Scale (NRS) ○ Follow-up short-term effect (up to three months) ○ Minimum clinically important difference not reported
Xiang et al, 2019[11] Country: China	Study Design: - SR/ MA Date Range: - 1980 to December 2018 Relevant Primary Studies: - Six of nine RCTs[92,93,96-99]	Inclusion: - Adult patients (18 years or older) - Diagnosis of chronic non-specific lower back pain (NSLBP) Exclusion: - Diagnosis of specific lower back pain (SLBP) such as infection, metastatic diseases, neoplasm, osteoarthritis, rheumatoid arthritis, inflammatory process, radicular syndrome or fractures	Intervention: - Acupuncture[92,93,96-99] ○ Descriptions varied Comparator: - Sham or Placebo Acupuncture[92,93,96-99] ○ Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) ○ Follow-up after treatment ○ Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Zhang et al, 2019[12] Country: China	Study Design: - SR/ MA Date Range: - Inception to May 2018 Primary Studies: - Twelve RCTs[115,116,118,120,121,152,163-167]	Inclusion: - Age range not specified - Diagnosis of fibromyalgia according to the 1990 American College of Rheumatology (ACR) criteria	Interventions: - Manual Acupuncture[118,121,163-167] o Descriptions varied - Electroacupuncture[120,152] o Descriptions varied - Acupuncture[115,116] o Descriptions varied Comparators: - Sham Manual Acupuncture[118,121,163-167] o Descriptions varied - Sham Electroacupuncture[120,152] o Descriptions varied - Conventional Medicine[115,116] o Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) o Follow-up of after treatment and more than three months after treatment (long-term effect) o Minimum clinically important difference not reported - Adverse Events o Mild: bruising, soreness, nausea, discomfort of needle insertion, and aggravation of symptoms o Length of follow up not reported o Minimum clinically important difference not reported
Li et al, 2018[4] Country: China	Study Design: - SR/ NMA Date Range: - Inception to January 2018 Relevant Primary Studies: - 11 of 16 RCTs[49,50,52,57,61,62,65-67,150,175]	Inclusion: - Age range not specified - Diagnosis of knee osteoarthritis	Interventions: - Manual Acupuncture[52,62,65-67] o Descriptions varied - Electroacupuncture[49,50,57,61,150] o Descriptions varied - Warm Needle Acupuncture[175] o Descriptions varied Comparators: - Sham Acupuncture[49,50,52,57,61,62,65,66,150] o Descriptions varied - Waiting List[67,175] o Descriptions varied	- Pain using the Western Ontario and McMaster Osteoarthritis Index (WOMAC) pain score o Length of follow up not reported o Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Vickers et al, 2018[13] Country: United States of America, United Kingdom, Germany, Switzerland	Study Design: - SR/ MA Date Range: - Inception to December 2015 Relevant Primary Studies: - 28 of 39 RCTs[49-57,82-85,89,92,93,99,138-142,155,183-187]	Inclusion: - Age range not specified - Diagnosis of osteoarthritis[49-57] - Diagnosis of back or neck musculoskeletal pain[89,92,93,99,155,183-187] - Diagnosis of chronic headache[138-142] - Diagnosis of specific shoulder pain[82-85]	Interventions: - Acupuncture[49-57,82-85,89,92,93,99,138-142,155,183-187] o Descriptions varied Comparators: - Sham Acupuncture[49-57,82-85,89,92,93,99,138-142,155,183-187] o Descriptions varied	- Pain (not defined) o Length of follow up not reported o Minimum clinically important difference not reported
Woo et al, 2018[14] Country: Republic of Korea	Study Design: - SR/ MA Date Range: - Inception to December 2017 Relevant Primary Studies: - 14 of 49 RCTs[132,136,168-170,176-178,188-193]	Inclusion: - Female patients of reproductive age (age range of 10 to 43 years) - Diagnosis of primary dysmenorrhea Exclusion: - Diagnosis of gynecological pathology such as endometriosis, adenomyosis, or uterine myoma. - Diagnosis of secondary dysmenorrhea or serious medical conditions	Interventions: - Manual Acupuncture[132,136,168-170] o Descriptions varied - Electroacupuncture[188-193] o Descriptions varied - Warm Acupuncture[176-178] o Descriptions varied Comparators: - Placebo Acupuncture[188-193] o Descriptions varied - Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [132,136,168-170,176-178] o Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) o Length of follow-up of one day, one menstrual cycle, and three menstrual cycles o Minimum clinically important difference not reported
Li et al, 2017[5] Country: China	Study Design: - SR/ NMA Date Range: - Inception to February 2016 Relevant Primary Studies: - 11 of 33 RCTs[69,70,72,74,75,156,158,171-174]	Inclusion: - Adult patients (age range of 24 to 79 years) - Diagnosis of myofascial pain syndrome	Interventions: - Manual Acupuncture[72,75,171-174] o 1 to 20 sessions - Dry Needling[69,70,74,156,158] o 1 to 20 sessions Comparators: - Sham or Placebo Acupuncture[69,70,72,74,75,156,158,171-174] o 1 to 20 sessions	- Pain Intensity using the Visual Analog Scale (VAS) or the Numerical Rating Scale (NRS) o Length of follow up not reported o Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up

Seo et al, 2017[15]
 	
Country:
Republic of Korea
	Study Design:
	- SR/ MA
	
	Date Range:
	- Inception to July 2016
	
	Relevant Primary Studies:
	- One of 14 RCT[113]
		Inclusion:
		- Adult patients
		  ○ Age range not specified
		- Diagnosis of chronic neck pain (mechanical neck disorders, myofascial pain syndrome, cervical spondylosis, cervical spine diseases accompanying radiating pain, and myalgia)
		
		Exclusion:
		- Diagnosis of myelopathy, or headache and dizziness without neck pain
		- Diagnosis of whiplash injury and external cause of neck injury
			Intervention:
			- Acupuncture[113]
			  ○ 9 sessions total – 3 sessions per week for 3 weeks
			
			Comparator:
			- Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)
			  ○ Zaltoprofen[113]
			  • 80 mg 3 per day for 3 weeks
				- Pain Intensity using the Visual Analog Scale (VAS)
				  ○ Follow-up of zero, one, three, and six weeks
				  ○ Minimum clinically important difference not reported

Xu et al, 2017[16]
 	
Country:
China
	Study Design:
	- SR/ MA
	
	Date Range:
	- Inception to December 2014
	
	Relevant Primary Studies:
	- Two of 19 RCTs[135,136]
		Inclusion:
		- Age range not specified
		- Diagnosis of primary dysmenorrhea according to the primary dysmenorrhea Clinical Guideline of the Society of Obstetricians and Gynaecologists of Canada.
			Intervention:
			- Acupuncture[135,136]
			  ○ Descriptions varied
			
			Comparator:
			- Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [135,136]
			  ○ Descriptions varied
				- Pain Intensity using the Visual Analog Scale (VAS)
				  ○ Follow-up of three months
				  ○ Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Yu et al, 2017[17] Country: China	Study Design: - SR/ MA Date Range: - Inception to April 2017 Relevant Primary Studies: - Six of nine RCTs[188,189,191,193-195]	Inclusion: - Age range not specified - Diagnosis of primary dysmenorrhea Exclusion: - Diagnosis of secondary dysmenorrhea (endometriosis, uterine myoma, ovarian cyst, intrauterine synechia, or intrauterine devices)	Intervention: - Electroacupuncture[188,189,191,193-195] ○ Descriptions varied Comparators: - Sham Acupuncture (Irrelevant Acupoint) [188,189,191,193-195] ○ Descriptions varied - Sham Acupuncture (Nonacupoint) [188,189,191,193-195] ○ Descriptions varied - Waiting List[189,191,194] ○ Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) ○ Follow-up of thirty minutes after treatment ○ Minimum clinically important difference not reported
Zhang et al, 2017[18] Country: China, United States of America	Study Design: - SR/ MA Date Range: - Inception to June 2017 Relevant Primary Studies: - Three of 17 RCTs[67,150,151]	Inclusion: - Age range not specified - Diagnosis of chronic knee pain for at least three months	Interventions: - Acupuncture[67] ○ 4 to 23 sessions over 2 to 26 weeks - Electroacupuncture[150,151] ○ 4 to 23 sessions over 2 to 26 weeks Comparators: - Oral Therapy[67] ○ Not specified - Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) ○ Etoricoxib[150] • Not specified ○ Ibuprofen[151] • Not specified	- Pain Intensity using the Visual Analog Scale (VAS) or Western Ontario and McMaster Osteoarthritis Index (WOMAC) pain score ○ Follow-up of four, eight, and twelve weeks after treatment ○ Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Qin et al, 2016[6] Country: China	Study Design: - SR/ NMA Date Range: - Not Clear Primary Studies: - Twelve RCTs[42-44,47,196-203]	Inclusion: - Men of all ages - Diagnosis of type III chronic prostatitis/chronic pelvic pain syndrome as classified by the National Institutes of Health (NIH) Exclusion: - Diagnosis of benign prostatic hyperplasia (BPH)	Interventions: - Acupuncture[42,44] o Sessions over 6 to 24 weeks - Electroacupuncture[43,47] o Sessions over 6 to 24 weeks Comparators: - Sham Acupuncture[42-44] o Sessions over 6 to 24 weeks - Placebo[196-203] o Sessions over 6 to 24 weeks - Medications o Antibiotics[201] • Sessions over 6 to 24 weeks o Alpha-Blockers[196-200,202,203] • Sessions over 6 to 24 weeks o Dual-Therapy[47,197,198] • Sessions over 6 to 24 weeks	- Pain Intensity using the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) pain score o Length of follow up not reported o Minimum clinically important difference not reported
Qin et al, 2016[19] Country: China	Study Design: - SR/ MA Date Range: - Inception to November 2015 Relevant Primary Studies: - Five of seven RCTs[42-45,47]	Inclusion: - Men of all ages - Diagnosis of type III chronic prostatitis/chronic pelvic pain syndrome as classified by the National Institutes of Health (NIH) Exclusion: - Diagnosis of acute bacterial prostatitis, a benign enlargement, prostate cancer, or other prostate diseases	Intervention: - Acupuncture[42-45,47] o Sessions over 4 to 10 weeks Comparators: - Sham Acupuncture[42-45] o Descriptions varied - Medications[45,47] o Descriptions varied	- Pain Intensity using the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) pain score o Follow-up ranged from eighteen to twenty-four weeks o Minimum clinically important difference of a six-point-decrease in the total NIH-CPSI score

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Rodriguez-Mansilla et al, 2016[20] Country: Spain	Study Design: - SR/ MA Date Range: - January 2000 to January 2013 Relevant Primary Studies: - Five of nine RCTs[69,74,155-157]	Inclusion: - Age range not specified - Diagnosis of myofascial pain syndrome	Intervention: - Dry Needling[69,74,155-157] ○ Descriptions varied Comparator: - Placebo[69,74,155-157] ○ Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) ○ Length of follow up not reported ○ Minimum clinically important difference not reported
Smith et al, 2016[21] Country: Australia, China	Study Design: - SR/ MA Date Range: - Inception to September 2015 Relevant Primary Studies: - 14 of 42 RCTs[122-134,137]	Inclusion: - Women of reproductive age (15 to 49 years) - Diagnosis of primary dysmenorrhea, i.e. no identifiable pelvic pathology as indicated by pelvic examination, ultrasound scans, or laparoscopy - Self-reported pain of primary dysmenorrhea during the majority of the menstrual cycles or for three consecutive menstrual cycles - Diagnosis of moderate to severe primary dysmenorrhea (pain that does not respond well to analgesics, affects daily activities, or has a high baseline score on a validated pain scale) Exclusion: - Diagnosis of secondary dysmenorrhea (e.g. fibroids, endometriosis); - Dysmenorrhea resulting from use of an intra-uterine device (IUD) - Mild or infrequent dysmenorrhea	Interventions: - Acupuncture ◦ Acupuncture[124-126,137] • Descriptions varied ◦ Manual Acupuncture[122,127-133] • Descriptions varied ◦ Electroacupuncture[123,134] • Descriptions varied Comparators: - Sham Acupuncture[122,123] ○ Descriptions varied - Placebo Acupuncture (away from acupoint)[124] ○ 9 sessions of 30 to 40 minutes over 3 months - Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) ◦ Ibuprofen[128-134] • Descriptions varied ◦ Indomethacin[126,127] • Descriptions varied ◦ Diclofenac[125] • 0.1 milligram daily	- Pain (not defined) ○ Length of follow up not reported ○ Minimum clinically important difference not reported - Pain Relief (not defined) ○ Length of follow up not reported ○ Minimum clinically important difference not reported - Adverse Events (not defined) ○ Length of follow up not reported ○ Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
			- Combined Oral Contraceptives[137] ○ 20 mg ethinyl estradiol and 150 mg desogestrel daily	
Yuan et al, 2016[22] Country: China	Study Design: - SR/ MA Date Range: - Inception to Not Clear Primary Studies: - Fifty-Nine RCTs[49-51,53-55,58-64,68-81,89-96,106,108-112,117-121]	Inclusion: - Adult patients (eighteen years or older) - Chronic Neck Pain[106,108-112] - Chronic Lower Back Pain[89-96] - Knee Osteoarthritis[49-51,53-55,59-64] - Hip Osteoarthritis[68] - Osteoarthritis[58] - Myofascial Pain[69-81] - Fibromyalgia[117-121] Exclusion: - Patients with postoperative pain - Pregnant women with pelvic pain	Interventions: - Acupuncture[49-51,53-55,58-64,68-81,89-96,106,108-112,117-121] ○ For chronic neck pain: median of 9 sessions (Interquartile range [IQR] = 6.8 to 9) for a median of 4 weeks (IQR = 3 to 5.5) using a median of 6 acupoints (IQR = 5 to 9) ○ For chronic lower back pain: median of 9 sessions (IQR = 2.5 to 12) for a median of 4 weeks (IQR = 2.5 to 5.8) using a median of 13 acupoints (IQR = 3 to 16.3) ○ For knee osteoarthritis: median of 9 sessions (IQR = 5.8 to 10.5) for a median of 4 weeks (IQR = 3 to 8) using a median of 10 acupoints (IQR = 6 to 11.8) ○ For hip osteoarthritis: median of 3 sessions (IQR not reported) for a median of 4 weeks (IQR not reported) using a median of 6 acupoints (IQR not reported)	- Pain Intensity (not defined) ○ Follow-up of immediate-term (within one week) ○ Minimum clinically important difference not reported

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
			○ For osteoarthritis: median of 7 sessions (IQR = 4.3 to 10) for a median of 3 weeks (IQR = 3 to 7.3) using a median of 10.3 acupoints (IQR = 6 to 12) ○ For myofascial pain: median of 1 sessions (IQR = 1 to 6) for a median of 1 weeks (IQR = 1 to 3) using a median of 3 acupoints (IQR = 2 to 5.6) ○ For fibromyalgia: median of 9 sessions (IQR = 9 to 18) for a median of 4 weeks (IQR = 4 to 12) using a median of 9 acupoints (IQR = 9 to 10.5) <u>Comparators</u>: - Sham or Placebo Acupuncture[49-51,53-55,58-64,68-81,89-96,106,108-112,117-121] ○ Descriptions varied	

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Ji et al, 2015[23] Country: China	Study Design: - SR/ MA Date Range: - Inception to April 2013 Relevant Primary Studies: - Three of 12 RCTs[86-88]	Inclusion: - Adult patients (age ranged eighteen to seventy-seven years) - Diagnosis of sciatica or presented with any or all of the following symptoms: radiating pain in the sciatic nerve distribution area, tenderness at the nerve stem, positive Lasegue's sign, Kernig's sign, and Bonnet's sign Exclusion: - Animal studies - Patients with back pain or low back pain but no symptoms of sciatica	Interventions: - Acupuncture[87] o Descriptions varied - Electroacupuncture[86,88] o Descriptions varied Comparators: - Ibuprofen[87,88] o Descriptions varied - Prednisone[88] o Descriptions varied - Diclofenac Diethylamine Gel[86] o Four grams four times per day for three weeks	- Pain Intensity using the Visual Analog Scale (VAS) o Length of follow-up not reported o Minimum clinically important difference not reported
Liu et al, 2015[24] Country: China	Study Design: - SR/ MA Date Range: - Inception to January 2014 Relevant Primary Studies: - 11 of 20 RCTs[69,72-74,108,112,156,159-162]	Inclusion: - Age range not specified - Diagnosis of myofascial trigger points associated with neck and shoulder pain according to the criteria of Simons et al Exclusion: - Diagnosis of myofascial trigger points associated with neck and shoulder pain that did not meet the criteria of Simons et al - Diagnosis of latent myofascial trigger points associated with neck and shoulder pain	Interventions: - Dry Needling[69,74,156,159-161] o Descriptions varied - Acupuncture[72,73,108,112,162] o Descriptions varied Comparators: - Sham Acupuncture or Sham Dry Needling[69,72,74,108,112,160] o Descriptions varied - Placebo Acupuncture[73,156,159,161,162] o Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) or the Numerical Rating Scale (NRS) o Follow-up of short-term (immediately to three days), medium-term (nine to twenty-eight days) and long-term (two to six months) o Minimum clinically important difference = 1.3cm/1.4cm

Table 2: Characteristics of Included Systematic Reviews and Meta-Analyses

First Author, Publication Year, Country	Study Designs, Search Date Range, and Numbers of Primary Studies Included	Population Characteristics	Intervention and Comparator(s)	Clinical Outcomes, Length of Follow-Up
Yuan et al, 2015[25] Country: China	Study Design: - SR/ MA Date Range: - Inception to May 2014 Relevant Primary Studies: - 22 of 75 RCTs[78,89-94,96-98,100-109,111,114]	Inclusion: - Adult patients (seventeen years or older) - Diagnosis of chronic neck or chronic low back pain Exclusion: - Diagnosis of neck or back pain caused by trauma, infection, cauda equina syndrome, bone rarefaction, compression fracture of a vertebral body, tumor, or fibromyalgia	Interventions: - Acupuncture[78,89-94,96-98,100-109,111,114] ○ For chronic neck pain: session median duration of 25 minutes (IQR 20 to 30), median 8.5 sessions (IQR 5.8 to 10.5) over median of 4 weeks (IQR 3 to 4.5), median 6 acupoints selected (IQR 5.8 to 10). ○ For chronic low back pain: session median duration of 25 minutes (Interquartile range (IQR) 20 to 30), median 10 sessions (IQR 6 to 12) over median of 4.5 weeks (IQR 3.3 to 7), median 9.8 acupoints selected (IQR 6 to 14). Comparators: - Sham Acupuncture[89-94,96-98,106-109,111] ○ Descriptions varied - Medications[78,100-105,114] ○ Descriptions varied	- Pain Intensity using the Visual Analog Scale (VAS) ○ Follow-up of immediate-term (less than or equal to one week), one month, three months, short-term (less than or equal to three months), and intermediate-term (three to twelve months) ○ Minimum clinically important difference not reported - Pain intensity (not defined) ○ Length of follow up not reported ○ Minimum clinically important difference not reported

SR= Systematic Review, MA= Meta-Analysis, NMA= Network Meta-Analysis, RCT= Randomized Controlled Trial, NS= Non-Randomized Study, VAS= Visual Analog Scale, NRS= Numerical Rating Scale, NIH-CPSI= National Institutes of Health Chronic Prostatitis Symptom Index, WOMAC= Western Ontario and McMaster Osteoarthritis Index, IQR = Interquartile Range

Table 3: Characteristics of Included Economic Evaluation

First Author, Publication Year, Country	Type of Analysis, Time Horizon, Perspective	Decision Problem	Population Characteristics	Intervention and Comparator(s)	Approach	Clinical and Cost Data Used in Analysis	Main Assumptions
Toroski et al, 2018[27] Country: Iran Study Design: Cross-sectional study	Type of Analysis: - Cost-utility analysis Time Horizon: - Six months Perspective: - Social	To compare the cost-utility of electroacupuncture and NSAIDs for chronic low back pain.	Inclusion: - Diagnosis of chronic low back pain - Used either electroacupuncture (at least five sessions) or NSAIDs for at least six months - 100 patients enrolled, aged 20 to 65 years Exclusion: - Diagnosis of acute low back pain - Used either electroacupuncture or nonsteroidal anti-inflammatory drugs (NSAIDs) for less than six months	Interventions: - Electroacupuncture - n = 59 Comparators: - NSAIDs - n = 41	Study-based Friction cost approach for indirect costs All related costs (calculated using average private and governmental prices) ACER calculated as the ICER was "practically negative." (p. 63)	Utilities measured by EQ-5D Direct medical cost data (inpatient medical records – includes all expenses of diagnosis, treatment, and follow ups) Indirect medical cost (friction cost approach - face-to-face or telephone interview using patient's self-estimate questionnaire)	"*Considers 80% and 40% average wage for loss of workdays and leisure time lost during caring for patients, respectively.*" (p. 63-64)

ACER= Average Cost-Effectiveness Ratio, EQ-5D = EuroQol Five Dimensions; ICER Incremental Cost-Effectiveness Ratio; NSAID = Nonsteroidal Anti-Inflammatory Drug,

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
American College of Rheumatology / National Psoriasis Foundation (ACR/NPF), 2019[29]						
Intended Users Health care providers **Target Population** Patients with active psoriatic arthritis **Country** United States of America	Intervention: - Acupuncture Comparator: - No Acupuncture	- Not Clear (Pain)	Comprehensive systematic literature search was conducted to identify systematic reviews and meta-analyses, or randomized controlled trials and observational studies if no systematic reviews or meta-analyses were available. Study selection performed in duplicate. Exact methodology of data extraction is unclear.	Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation (GRADE)	Recommendations developed from systematic reviews and meta-analyses, or randomized controlled trials and observational studies if no systematic reviews or meta-analyses were available. Strength of recommendations was rated using GRADE. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the designated Voting Panel.	Prior to publication, evidence and recommendations reviewed and approved by the designated Patient Panel.
Cleveland (Ohio) Clinic Family Medicine Residency (CC), 2019[2]						
Intended Users Family Physicians **Target Population** Patients with common pain conditions	Intervention: - Acupuncture - Dry needling Comparator: - Sham Acupuncture	- Clinical Effectiveness - Frequency of Headaches or Migraines - Pain Relief - Adverse Events	Comprehensive systematic literature search was conducted to identify systematic reviews and meta-analyses.	Quality of evidence was rated using Strength-of-Recommendation Taxonomy (SORT).	Recommendations developed from systematic reviews and meta-analyses. Strength of recommendations was rated using SORT.	Guideline not validated.

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
(chronic low back pain, knee osteoarthritis, headache, myofascial pain, neck pain, and fibromyalgia) **Country** United States of America			Exact methodology of screening and data extraction is unclear.		Exact methodology on consensus for phrasing and strength of recommendations is unclear.	
Canadian Urological Association (CUA), 2018[30]						
Intended Users Urologists **Target Population** Men diagnosed with Chronic Scrotal Pain **Country** Canada	Intervention: - Acupuncture	- National Institutes of Health - Chronic Prostatitis Symptom Index (NIH-CPSI) scores	Comprehensive systematic literature search was conducted to identify systematic reviews, meta-analyses, randomized-controlled trials, consensus statements, and guidelines. Exact methodology of screening and data extraction is unclear.	Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation (GRADE)	Recommendations developed from systematic reviews, meta-analyses, randomized controlled trials, consensus statements, and guidelines. Strength of recommendations was rated using GRADE. Exact methodology on consensus for phrasing and strength of recommendations is unclear.	Guideline not validated.
American College of Physicians (ACP), 2017[31]						
Intended Users Clinicians	Intervention: - Acupuncture	- Pain relief - Function	Comprehensive systematic literature	Quality of evidence was rated using ACP's	Recommendations developed from systematic reviews	Validation through publication

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
Target Population Adults with chronic low back pain **Country** United States of America	Comparator: - Sham acupuncture - No acupuncture - Medications (NSAIDs, muscle relaxants, or analgesics)	- Pain intensity	search was conducted to identify systematic reviews and randomized-controlled trials. Exact methodology of screening and data extraction is unclear.	guideline grading system.	and randomized controlled trials. Strength of recommendations was rated using ACP's guideline grading system. Exact methodology on consensus for phrasing and strength of recommendations is unclear.	journal's peer review process and posted online for comments from ACP Regents and ACP Governors, who represent ACP members at the regional level
Belgian Health Care Knowledge Centre (KCE), 2017[32]						
Intended Users General practitioners, specialists in physical medicine and rehabilitation, physiotherapists, pain therapists, orthopedic surgeons, neurosurgeons, psychologists and other clinicians as well as patients, hospital managers and policy makers. **Target Population**	Intervention: - Acupuncture Comparator: - Sham acupuncture - Usual care	- Pain - Function - Adverse events	Comprehensive systematic literature search was conducted to identify guidelines. Study selection performed in duplicate. Exact methodology of data extraction is unclear.	Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation (GRADE)	Recommendations developed from guidelines. Strength of recommendations was rated using GRADE. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the Guideline Development Group.	Guideline externally reviewed by stakeholders (health care professionals). Guideline internally validated for content first by two clinicians and then for methodology by representatives of the Belgian Centre for Evidence-Based Medicine.

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
Adults with low back pain and radicular pain **Country** Belgium						
Canadian Pain: Spinal Cord Injury Working Group (CanPain SCI), 2016[33]						
Intended Users Rehabilitation health-care providers **Target Population** Patients with neuropathic pain after spinal cord injury **Country** Canada	Intervention: - Acupuncture	- Neuropathic pain intensity	Exact methodology of literature review, screening, and data extraction is unclear.	Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation (GRADE)	Recommendations developed from systematic reviews and randomized controlled trials. Strength of recommendations was rated using GRADE. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the CanPain SCI Working Group (must achieve at least 75% agreement to be adopted).	Guideline not validated.
Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration, 2016[34]						
Intended Users Clinicians **Target Population** Adults with grades I–III neck pain and	Intervention: - Electroacupuncture Comparator: - Simulated acupuncture	- Not clear (pain)	Comprehensive systematic literature search was conducted to identify systematic reviews,	Quality of evidence was rated using Scottish Intercollegiate Guidelines Network (SIGN) criteria.	Recommendations developed from systematic reviews, economic evaluations, and randomized controlled trials.	Validated by stakeholders invited by the Government of Ontario and by the public at a series of public consultations

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
associated disorders of less than 6 months duration **Country** Canada			economic evaluations, and recent randomized-controlled trials. Study selection performed in duplicate. Exact methodology of data extraction is unclear.		Strength of recommendations was rated using adapted National Institute for Health and Care Excellence Methodology. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the recommendation subcommittee (75% consensus required through secret ballot for recommendation adoption).	hosted by the Government of Ontario.
Prostatitis Expert Reference Group (PERG), 2015[35]						
Intended Users Health-care professionals **Target Population** Men with chronic prostatitis / chronic pelvic pain syndrome **Country** United Kingdom	Intervention: - Acupuncture - Electroacupuncture Comparator: - Sham Acupuncture	- National Institutes of Health - Chronic Prostatitis Symptom Index (NIH-CPSI) Pain Score	Comprehensive systematic literature search was conducted to identify clinical trials, randomized control trials, guidelines, systematic reviews, meta-analyses, and observational studies. Exact methodology of	Quality of evidence was rated using Oxford Centre for Evidence-based Medicine (OCEBM) Levels of Evidence	Recommendations developed from clinical trials, randomized control trials, guidelines, systematic reviews, meta-analyses, and observational studies. Strength of recommendations was not rated. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the	Guideline not validated.

Table 4: Characteristics of Included Guidelines

Intended Users, Target Population	Intervention and Practice Considered	Major Outcomes Considered	Evidence Collection, Selection, and Synthesis	Evidence Quality Assessment	Recommendations Development and Evaluation	Guideline Validation
			screening and data extraction is unclear.		Delphi Panel and the Prostatitis Expert Reference Group.	
Department of Veterans Affairs and the Department of Defense (VA/DoD), 2014[36]						
Intended Users Primary care clinicians **Target Population** Pain-Predominant Chronic Multisymptom Illness **Country** United States of America	Intervention: - Acupuncture Comparator: - Sham Acupuncture - Conventional Medicine	- Pain	Comprehensive systematic literature search was conducted to identify reviews, trials, and technology assessments. Exact methodology of screening and data extraction is unclear.	Quality of evidence was rated using Grading of Recommendations Assessment, Development and Evaluation (GRADE).	Recommendations developed from reviews, trials, and technology assessments. Strength of recommendations was rated using GRADE. Prior to publication, consensus on phrasing and strength of recommendations is achieved by the Guideline Champions.	Guideline not validated.

GRADE = Grading of Recommendations Assessment, Development and Evaluation, SORT = Strength-of-Recommendation Taxonomy

Appendix 3: Critical Appraisal of Included Publications

Table 5: Strengths and Limitations of Systematic Reviews, Meta-Analyses, and Network Meta-Analyses using AMSTAR II[26]

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
Domain 1: PICO									
1. Research questions and inclusion criteria include the population.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Research questions and inclusion criteria include the intervention.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Research questions and inclusion criteria include the comparator group.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Research questions and inclusion criteria include the outcome.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Research questions and inclusion criteria include the timeframe for follow-up.	No	Yes	Yes	No	No	No	No	No	No
Domain 2: Protocol									
6. Review question(s) were established prior to the conduct of the review.	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
7. Any significant deviations from the protocol regarding the review question(s) were justified.	Yes	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
8. A search strategy was established prior to the conduct of the review.	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
9. Any significant deviation from the protocol regarding the search strategy was justified.	Yes	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
10. Inclusion/exclusion criteria was established prior to the conduct of the review.	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
11. Any significant deviations from the protocol regarding the inclusion/exclusion criteria were justified.	Yes	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
12. A risk of bias assessment was established prior to the conduct of the review.	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
13. Any significant deviation from the protocol regarding the risk of bias assessment was justified.	Yes	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
14. If appropriate, a meta-analysis/synthesis plan was established prior to the conduct of the review.	N/A	Yes	No	No	Yes	Yes	Yes	No	Yes
15. If appropriate, any significant deviation from the protocol regarding the meta-analysis/synthesis plan was justified.	N/A	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
16. If appropriate, a plan for investigating causes of heterogeneity was established prior to the conduct of the review.	N/A	Yes	No	No	Yes	Yes	Yes	No	Yes
17. If appropriate, any significant deviation from the protocol regarding the plan for investigating causes of heterogeneity was justified.	N/A	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes
Domain 3: Study Design Selection									
18. The review explained the selection of either: only RCTs; only NSs; or RCTs and NSs.	No	No	No	No	No	Yes	No	No	No
Domain 4: Search Strategy									
19. At least 2 databases (relevant to research question) were searched.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20. Key words and/or search strategy were provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21. Publication restrictions (e.g. language) were justified.	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
22. The reference lists / bibliographies of included studies were searched.	No	Yes	No	Yes	No	Yes	No	No	Yes
23. Trial/study registries were searched.	No	Yes	No	Yes	Yes	Yes	No	No	No
24. Content experts in the field were included or consulted.	No	Yes	No	No	No	No	No	No	No
25. Grey literature was searched.	Yes	Yes	No	No	Yes	No	No	No	No
26. The search was conducted within 24 months of completion of the review.	Yes	Yes	Not Clear	Yes	Yes	Yes	Yes	Yes	No
Domain 5: Duplication of Study Selection									
27. At least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 6: Duplication of Data Extraction									
28. At least two reviewers achieved consensus on which data to extract from included studies OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.	Yes	Yes	Not Clear	Not Clear	Yes	Not Clear	Yes	Not Clear	Not Clear
Domain 7: Excluded Studies									
29. A list of all potentially relevant studies that were read in full-text form but excluded from the review was provided.	No	Yes	No	No	No	No	Yes	No	No
30. The exclusion from the review of each potentially relevant study was justified.	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
Domain 8: Included Studies									
31. Population(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32. Intervention(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33. If applicable, dosage and timing of intervention(s) were described.	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
34. Comparator(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35. If applicable, dosage and timing of comparator(s) were described.	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
36. Outcomes of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37. Timeframe for follow-up of each included study was described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38. Study setting(s) of each included study were described in detail.	Yes	Yes	Yes	No	No	No	Yes	Yes	No
39. Research design of each included study was described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 9: Risk of Bias Assessment									
40. RCTs: Risk of bias from unconcealed allocation was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41. RCTs: Risk of bias from the lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all-cause mortality) was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42. RCTs: Risk of bias from an allocation sequence that was not truly random was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
43. RCTs: Risk of bias from the selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
44. NSs: Risk of bias from confounding was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
45. NSs: Risk of bias from selection bias was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46. NSs: Risk of bias from methods used to ascertain exposures and outcomes was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
47. NSs: Risk of bias from selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Domain 10: Sources of Funding									
48. If available, the sources of funding of each included study were reported.	No	Yes	No	No	No	No	No	No	No
Domain 11: Meta-Analysis (if applicable)									
49. RCTs: Combining the data in a meta-analysis was justified.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50. RCTs: An appropriate weighted technique to combine study results used.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51. RCTs: If applicable, heterogeneity was adjusted for.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52. RCTs: If applicable, the causes of any heterogeneity were investigated.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53. NSs: Combining the data in a meta-analysis was justified.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54. NSs: An appropriate weighted technique to combine study results used.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
55. NSs: If applicable, heterogeneity was adjusted for.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56. NSs: Statistically combined effect estimates were adjusted for confounding, rather than combining raw data, or combining raw data when adjusted effect estimates were not available was justified.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
57. Separate summary estimates for RCTs and NSs were reported separately when both were included in the review.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Domain 12: Potential Impact from Risk of Bias on Meta-Analysis (if applicable)									
58. Only low risk of bias RCTs were included OR if the pooled estimate was based on RCTs and/or NSs at variable risks of bias, the possible impact from risks of bias on summary estimates of effect were analyzed.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 13: Potential Impact from Risk of Bias on Review Interpretation and Discussion of Results									
59. Only low risk of bias RCTs were included OR if RCTs with moderate or high risk of bias or NSs were included the review, a discussion of the likely impact of risk of bias on the results was provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 14: Heterogeneity (if applicable)									
60. No significant heterogeneity in the results was found OR if heterogeneity was found, sources of any heterogeneity in the results were investigated and the impact of this on the results of the review was discussed.	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Item	Systematic Reviews and Meta-Analyses								
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]
Domain 15: Publication Bias / Small Study Bias (if applicable)									
61. Graphical or statistical tests for publication bias were performed and the likelihood and magnitude of impact of publication bias was discussed.	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Domain 16: Conflict of Interest									
62. No competing interests (including funding) were reported OR funding sources were reported and how potential conflicts of interest were managed was described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

RCT= Randomized Controlled Trial, NS= Non-Randomized Study

Table 5: Continued

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
Domain 1: PICO									
1. Research questions and inclusion criteria include the population.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Research questions and inclusion criteria include the intervention.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Research questions and inclusion criteria include the comparator group.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Research questions and inclusion criteria include the outcome.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Research questions and inclusion criteria include the timeframe for follow-up.	No	No	No	No	Yes	No	No	No	No
Domain 2: Protocol									
6. Review question(s) were established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
7. Any significant deviations from the protocol regarding the review question(s) were justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A
8. A search strategy was established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
9. Any significant deviation from the protocol regarding the search strategy was justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A
10. Inclusion/exclusion criteria was established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
11. Any significant deviations from the protocol regarding the inclusion/exclusion criteria were justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
12. A risk of bias assessment was established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
13. Any significant deviation from the protocol regarding the risk of bias assessment was justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A
14. If appropriate, a meta-analysis/synthesis plan was established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
15. If appropriate, any significant deviation from the protocol regarding the meta-analysis/synthesis plan was justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A
16. If appropriate, a plan for investigating causes of heterogeneity was established prior to the conduct of the review.	Yes	Yes	No	No	No	Yes	No	Yes	No
17. If appropriate, any significant deviation from the protocol regarding the plan for investigating causes of heterogeneity was justified.	Yes	Yes	N/A	N/A	N/A	Yes	N/A	Yes	N/A
Domain 3: Study Design Selection									
18. The review explained the selection of either: only RCTs; only NSs; or RCTs and NSs.	No	No	No	No	No	No	No	No	No
Domain 4: Search Strategy									
19. At least 2 databases (relevant to research question) were searched.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20. Key words and/or search strategy were provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21. Publication restrictions (e.g. language) were justified.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
22. The reference lists / bibliographies of included studies were searched.	No	Yes	Yes	No	Yes	Yes	Yes	No	No
23. Trial/study registries were searched.	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No
24. Content experts in the field were included or consulted.	No	No	No	No	No	Yes	No	No	No
25. Grey literature was searched.	No	Yes	No	No	Yes	Yes	No	Yes	No
26. The search was conducted within 24 months of completion of the review.	Yes	Yes			Not Clear	Yes	Not Clear	Yes	Not Clear
Domain 5: Duplication of Study Selection									
27. At least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.	Yes	Yes	Yes	Yes	Yes	Yes	Not Clear	Yes	Yes
Domain 6: Duplication of Data Extraction									
28. At least two reviewers achieved consensus on which data to extract from included studies OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.	Not Clear	Not Clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 7: Excluded Studies									
29. A list of all potentially relevant studies that were read in full-text form but excluded from the review was provided.	No	No	No	No	No	No	No	No	No
30. The exclusion from the review of each potentially relevant study was justified.	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
Domain 8: Included Studies									
31. Population(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
32. Intervention(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33. If applicable, dosage and timing of intervention(s) were described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
34. Comparator(s) of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35. If applicable, dosage and timing of comparator(s) were described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
36. Outcomes of each included study were described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37. Timeframe for follow-up of each included study was described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
38. Study setting(s) of each included study were described in detail.	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes
39. Research design of each included study was described in detail.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 9: Risk of Bias Assessment									
40. RCTs: Risk of bias from unconcealed allocation was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41. RCTs: Risk of bias from the lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all-cause mortality) was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42. RCTs: Risk of bias from an allocation sequence that was not truly random was assessed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
43. RCTs: Risk of bias from the selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
44. NSs: Risk of bias from confounding was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
45. NSs: Risk of bias from selection bias was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46. NSs: Risk of bias from methods used to ascertain exposures and outcomes was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
47. NSs: Risk of bias from selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Domain 10: Sources of Funding									
48. If available, the sources of funding of each included study were reported.	No	No	No	No	No	No	No	No	No
Domain 11: Meta-Analysis (if applicable)									
49. RCTs: Combining the data in a meta-analysis was justified.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50. RCTs: An appropriate weighted technique to combine study results used.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51. RCTs: If applicable, heterogeneity was adjusted for.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52. RCTs: If applicable, the causes of any heterogeneity were investigated.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53. NSs: Combining the data in a meta-analysis was justified.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
54. NSs: An appropriate weighted technique to combine study results used.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
55. NSs: If applicable, heterogeneity was adjusted for.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56. NSs: Statistically combined effect estimates were adjusted for confounding, rather than combining raw data, or combining raw data when adjusted effect estimates were not available was justified.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
57. Separate summary estimates for RCTs and NSs were reported separately when both were included in the review.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Domain 12: Potential Impact from Risk of Bias on Meta-Analysis (if applicable)									
58. Only low risk of bias RCTs were included OR if the pooled estimate was based on RCTs and/or NSs at variable risks of bias, the possible impact from risks of bias on summary estimates of effect were analyzed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 13: Potential Impact from Risk of Bias on Review Interpretation and Discussion of Results									
59. Only low risk of bias RCTs were included OR if RCTs with moderate or high risk of bias or NSs were included the review, a discussion of the likely impact of risk of bias on the results was provided.	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Domain 14: Heterogeneity (if applicable)									
60. No significant heterogeneity in the results was found OR if heterogeneity was found, sources of any heterogeneity in the results were investigated and the impact of this on the results of the review was discussed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Item	Systematic Reviews and Meta-Analyses								
	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016[6]	Qin et al, 2016[19]	Rodriguez-Mansilla et al, 2016[20]
Domain 15: Publication Bias / Small Study Bias (if applicable)									
61. Graphical or statistical tests for publication bias were performed and the likelihood and magnitude of impact of publication bias was discussed.	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Domain 16: Conflict of Interest									
62. No competing interests (including funding) were reported OR funding sources were reported and how potential conflicts of interest were managed was described.	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

RCT= Randomized Controlled Trial, NS= Non-Randomized Study

Table 5: Continued

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
Domain 1: PICO									
1. Research questions and inclusion criteria include the population.				Yes	Yes	Yes	Yes	Yes	
2. Research questions and inclusion criteria include the intervention.				Yes	Yes	Yes	Yes	Yes	
3. Research questions and inclusion criteria include the comparator group.				Yes	Yes	Yes	Yes	Yes	
4. Research questions and inclusion criteria include the outcome.				Yes	Yes	Yes	Yes	Yes	
5. Research questions and inclusion criteria include the timeframe for follow-up.				No	Yes	No	Yes	Yes	
Domain 2: Protocol									
6. Review question(s) were established prior to the conduct of the review.				Yes	Yes	No	No	No	
7. Any significant deviations from the protocol regarding the review question(s) were justified.				Yes	Yes	N/A	N/A	N/A	
8. A search strategy was established prior to the conduct of the review.				Yes	Yes	No	No	No	
9. Any significant deviation from the protocol regarding the search strategy was justified.				Yes	Yes	N/A	N/A	N/A	
10. Inclusion/exclusion criteria was established prior to the conduct of the review.				Yes	Yes	No	No	No	
11. Any significant deviations from the protocol regarding the inclusion/exclusion criteria were justified.				Yes	Yes	N/A	N/A	N/A	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
12. A risk of bias assessment was established prior to the conduct of the review.				Yes	Yes	No	No	No	
13. Any significant deviation from the protocol regarding the risk of bias assessment was justified.				Yes	Yes	N/A	N/A	N/A	
14. If appropriate, a meta-analysis/synthesis plan was established prior to the conduct of the review.				Yes	Yes	No	No	No	
15. If appropriate, any significant deviation from the protocol regarding the meta-analysis/synthesis plan was justified.				Yes	Yes	N/A	N/A	N/A	
16. If appropriate, a plan for investigating causes of heterogeneity was established prior to the conduct of the review.				Yes	Yes	No	No	No	
17. If appropriate, any significant deviation from the protocol regarding the plan for investigating causes of heterogeneity was justified.				Yes	Yes	N/A	N/A	N/A	
Domain 3: Study Design Selection									
18. The review explained the selection of either: only RCTs; only NSs; or RCTs and NSs.				No	No	No	No	No	
Domain 4: Search Strategy									
19. At least 2 databases (relevant to research question) were searched.				Yes	Yes	Yes	Yes	Yes	
20. Key words and/or search strategy were provided.				Yes	Yes	Yes	Yes	Yes	
21. Publication restrictions (e.g. language) were justified.				Yes	Yes	Yes	Yes	Yes	
22. The reference lists / bibliographies of included studies were searched.				Yes	Yes	No	No	Yes	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
23. Trial/study registries were searched.				Yes	No	No	Yes	No	
24. Content experts in the field were included or consulted.				No	Yes	No	No	Yes	
25. Grey literature was searched.				Yes	No	Yes	Yes	No	
26. The search was conducted within 24 months of completion of the review.				Yes	Not Clear	Yes	Yes	Yes	
Domain 5: Duplication of Study Selection									
27. At least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.				Not Clear	Yes	Yes	Yes	Not Clear	
Domain 6: Duplication of Data Extraction									
28. At least two reviewers achieved consensus on which data to extract from included studies OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.				Not Clear	Yes	Yes	Yes	Yes	
Domain 7: Excluded Studies									
29. A list of all potentially relevant studies that were read in full-text form but excluded from the review was provided.				Yes	No	No	No	No	
30. The exclusion from the review of each potentially relevant study was justified.				Yes	Yes	Yes	Yes	Yes	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
Domain 8: Included Studies									
31. Population(s) of each included study were described in detail.				Yes	No	Yes	Yes	Yes	
32. Intervention(s) of each included study were described in detail.				Yes	No	Yes	Yes	Yes	
33. If applicable, dosage and timing of intervention(s) were described.				Yes	No	Yes	Yes	Yes	
34. Comparator(s) of each included study were described in detail.				Yes	No	Yes	Yes	Yes	
35. If applicable, dosage and timing of comparator(s) were described.				Yes	No	Yes	Yes	Yes	
36. Outcomes of each included study were described in detail.				Yes	No	Yes	Yes	Yes	
37. Timeframe for follow-up of each included study was described in detail.				Yes	No	Yes	Yes	Yes	
38. Study setting(s) of each included study were described in detail.				Yes	No	No	Yes	Yes	
39. Research design of each included study was described in detail.				Yes	Yes	Yes	Yes	Yes	
Domain 9: Risk of Bias Assessment									
40. RCTs: Risk of bias from unconcealed allocation was assessed.				Yes	Yes	Yes	Yes	Yes	
41. RCTs: Risk of bias from the lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all-cause mortality) was assessed.				Yes	Yes	Yes	Yes	Yes	
42. RCTs: Risk of bias from an allocation sequence that was not truly random was assessed.				Yes	Yes	Yes	Yes	Yes	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
43. RCTs: Risk of bias from the selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.				Yes	Yes	Yes	Yes	Yes	
44. NSs: Risk of bias from confounding was assessed.				N/A	N/A	N/A	N/A	N/A	
45. NSs: Risk of bias from selection bias was assessed.				N/A	N/A	N/A	N/A	N/A	
46. NSs: Risk of bias from methods used to ascertain exposures and outcomes was assessed.				N/A	N/A	N/A	N/A	N/A	
47. NSs: Risk of bias from selection of the reported result from among multiple measurements or analyses of a specified outcome was assessed.				N/A	N/A	N/A	N/A	N/A	
Domain 10: Sources of Funding									
48. If available, the sources of funding of each included study were reported.				Yes	No	No	No	No	
Domain 11: Meta-Analysis (if applicable)									
49. RCTs: Combining the data in a meta-analysis was justified.				Yes	Yes	Yes	Yes	Yes	
50. RCTs: An appropriate weighted technique to combine study results used.				Yes	Yes	Yes	Yes	Yes	
51. RCTs: If applicable, heterogeneity was adjusted for.				Yes	Yes	Yes	Yes	Yes	
52. RCTs: If applicable, the causes of any heterogeneity were investigated.				Yes	Yes	Yes	Yes	Yes	
53. NSs: Combining the data in a meta-analysis was justified.				N/A	N/A	N/A	N/A	N/A	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
54. NSs: An appropriate weighted technique to combine study results used.				N/A	N/A	N/A	N/A	N/A	
55. NSs: If applicable, heterogeneity was adjusted for.				N/A	N/A	N/A	N/A	N/A	
56. NSs: Statistically combined effect estimates were adjusted for confounding, rather than combining raw data, or combining raw data when adjusted effect estimates were not available was justified.				N/A	N/A	N/A	N/A	N/A	
57. Separate summary estimates for RCTs and NSs were reported separately when both were included in the review.				N/A	N/A	N/A	N/A	N/A	
Domain 12: Potential Impact from Risk of Bias on Meta-Analysis (if applicable)									
58. Only low risk of bias RCTs were included OR if the pooled estimate was based on RCTs and/or NSs at variable risks of bias, the possible impact from risks of bias on summary estimates of effect were analyzed.				Yes	Yes	Yes	Yes	Yes	
Domain 13: Potential Impact from Risk of Bias on Review Interpretation and Discussion of Results									
59. Only low risk of bias RCTs were included OR if RCTs with moderate or high risk of bias or NSs were included the review, a discussion of the likely impact of risk of bias on the results was provided.				Yes	Yes	Yes	Yes	Yes	
Domain 14: Heterogeneity (if applicable)									
60. No significant heterogeneity in the results was found OR if heterogeneity was found, sources of any heterogeneity in the results were investigated and the impact of this on the results of the review was discussed.				Yes	Yes	Yes	Yes	Yes	

Item	Systematic Reviews and Meta-Analyses								
				Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]	
Domain 15: Publication Bias / Small Study Bias (if applicable)									
61. Graphical or statistical tests for publication bias were performed and the likelihood and magnitude of impact of publication bias was discussed.				Yes	Yes	Yes	Yes	Yes	
Domain 16: Conflict of Interest									
62. No competing interests (including funding) were reported OR funding sources were reported and how potential conflicts of interest were managed was described.				Yes	Yes	Yes	Yes	Yes	

RCT= Randomized Controlled Trial, NS= Non-Randomized Study

Table 6: Strengths and Limitations of Economic Study using the Drummond Checklist[28]

Item	Economic Study
	Toroski et al, 2018[27]
Domain 1: Study Design	
1. The research question is stated.	Yes
2. The economic importance of the research question is stated.	Yes
3. The viewpoint(s) of the analysis are clearly stated and justified.	Yes
4. The rationale for choosing alternative programs or interventions compared is stated.	Yes
5. The alternatives being compared are clearly described.	Yes
6. The form of economic evaluation used is stated.	Yes
7. The choice of form of economic evaluation is justified in relation to the questions addressed.	Yes
Domain 2: Data Collection	
8. The source(s) of effectiveness estimates used are stated.	Yes
9. Details of the design and results of effectiveness study are given (if based on a single study).	Yes
10. Details of the methods of synthesis or meta-analysis of estimates are given (if based on a synthesis of a number of effectiveness studies).	N/A
11. The primary outcome measure(s) for the economic evaluation are clearly stated.	Yes
12. Methods to value benefits are stated.	Yes
13. Details of the subjects from whom valuations were obtained were given.	Yes
14. Productivity changes (if included) are reported separately.	Yes
15. The relevance of productivity changes to the study question is discussed.	Yes
16. Quantities of resource use are reported separately from their unit costs.	Yes
17. Methods for the estimation of quantities and unit costs are described.	Yes
18. Currency and price data are recorded.	Yes
19. Details of currency of price adjustments for inflation or currency conversion are given.	Yes
20. Details of any model used are given.	Not Clear
21. The choice of model used and the key parameters on which it is based are justified.	Not Clear

Table 6: Strengths and Limitations of Economic Study using the Drummond Checklist[28]

Item	Economic Study Toroski et al, 2018[27]
Domain 3: Analysis and Interpretation of Results	
22. Time horizon of costs and benefits is stated.	Yes
23. The discount rate(s) is stated.	No
24. The choice of discount rate(s) is justified.	No
25. An explanation is given if costs and benefits are not discounted.	No
26. Details of statistical tests and confidence intervals are given for stochastic data.	Yes
27. The approach to sensitivity analysis is given.	No
28. The choice of variables for sensitivity analysis is justified.	No
29. The ranges over which the variables are varied are justified.	No
30. Relevant alternatives are compared.	Yes
31. Incremental analysis is reported.	Yes
32. Major outcomes are presented in a disaggregated as well as aggregated form.	Yes
33. The answer to the study question is given.	Yes
34. Conclusions follow from the data reported.	Yes
35. Conclusions are accompanied by the appropriate caveats.	Yes

Table 7: Strengths and Limitations of Guidelines using AGREE II[39]

Item	Guideline								
	ACR/NPF, 2019[29]	CC, 2019[2]	CUA, 2018[30]	ACP, 2017[31]	KCE, 2017[32]	CanPain SCI, 2016[33]	OPTIMa, 2016[34]	PERG, 2015[35]	VA/DoD, 2014[36]
Domain 1: Scope and Purpose									
1. The overall objective(s) of the guideline is (are) specifically described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. The health question(s) covered by the guideline is (are) specifically described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 2: Stakeholder Involvement									
4. The guideline development group includes individuals from all relevant professional groups.	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5. The views and preferences of the target population (patients, public, etc.) have been sought.	Yes	No	No	Yes	Yes	No	Yes	No	Yes
6. The target users of the guideline are clearly defined.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 3: Rigour of Development									
7. Systematic methods were used to search for evidence.	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes
8. The criteria for selecting the evidence are clearly described.	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
9. The strengths and limitations of the body of evidence are clearly described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. The methods for formulating the recommendations are clearly described.	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
11. The health benefits, side effects, and risks have been considered in formulating the recommendations.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12. There is an explicit link between the recommendations and the supporting evidence.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13. The guideline has been externally reviewed by experts prior to its publication.	Yes	No	No	Yes	Yes	No	Yes	Yes	No
14. A procedure for updating the guideline is provided.	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Strengths and Limitations of Guidelines using AGREE II[39]

Item	Guideline								
	ACR/NPF, 2019[29]	CC, 2019[2]	CUA, 2018[30]	ACP, 2017[31]	KCE, 2017[32]	CanPain SCI, 2016[33]	OPTIMa, 2016[34]	PERG, 2015[35]	VA/DoD, 2014[36]
Domain 4: Clarity of Presentation									
15. The recommendations are specific and unambiguous.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16. The different options for management of the condition or health issue are clearly presented.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17. Key recommendations are easily identifiable.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 5: Applicability									
18. The guideline describes facilitators and barriers to its application.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
19. The guideline provides advice and/or tools on how the recommendations can be put into practice.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
20. The potential resource implications of applying the recommendations have been considered.	Yes	Yes	No	Yes	Yes	No	No	No	No
21. The guideline presents monitoring and/or auditing criteria.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Domain 6: Editorial Independence									
22. The views of the funding body have not influenced the content of the guideline.	Not Clear	Not Clear	Not Clear	Yes	Yes	Yes	Yes	Yes	Not Clear
23. Competing interests of guideline development group members have been recorded and addressed.	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No

Appendix 4: Main Study Findings and Authors' Conclusions

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
Al-Boloushi et al, 2019[7]	
Dry Needling versus Sham Dry Needling for Plantar Fasciitis: - Significant decrease in first step pain using the Visual Analog Scale (VAS) – length of follow-up not reported o -14.4mm (95% CI-23.5mm to -5.2mm)[182] - Significant decrease in foot pain using the Foot Health Status Questionnaire (FHSQ) – length of follow-up not reported o 10.0 points (95% CI 1.0 points to 19.1 points) [182]	"*To date, there are few studies supporting the use of dry needling and its effects. Recently, … RCTs have reported a good outcome for these patients with minimal side effects.*" (p. 125) "*Dry needling provided statistically significant reduction in [Plantar heel pain]. However, the magnitude of this effect should be studied against the frequency of minor transitory adverse events.*" (p. 131) "*As a second-line treatment, dry needling techniques should be employed initially as these are non-pharmacological and show promising results. However, this technique should be investigated further on a bigger sample group with a longer follow-up period.*" (p. 135)
Franco et al, 2019[8]	
Acupuncture versus Sham Acupuncture for Type III Chronic Prostatitis/Chronic Pelvic Pain Syndrome: - Significant decrease in prostatitis symptoms using National Institutes of Health - Chronic Prostatitis Symptom Index (NIH-CPSI) score – length of follow-up not reported o Mean difference (MD) = -5.79 (95% CI -7.32 to -4.26) – Moderate Quality of Evidence[42-44] - Non-significant difference in adverse events – length of follow-up not reported o Relative risk (RR) = 1.33 (95% CI 0.51 to 3.46) – Low Quality of Evidence[42-44] Acupuncture versus Medical Therapy for Type III Chronic Prostatitis/Chronic Pelvic Pain Syndrome: - Significant decrease in prostatitis symptoms using the NIH-CPSI – length of follow-up not reported o MD = -6.05 (95% CI -7.87 to -4.24) – Moderate Quality of Evidence[43,46,47] - Non-significant difference in adverse events – length of follow-up not reported o Zero events – Low Quality of Evidence[43,46,47]	"*Based on the findings with moderate to high [Quality of Evidence], this review found that some non-pharmacological interventions, such as acupuncture and extracorporeal shockwave therapy, are likely to result in a decrease in prostatitis symptoms and may not be associated with a greater incidence of adverse events.*" (p. 198)
Li et al, 2019[3]	
Dry Needling versus Placebo for Plantar Fasciitis: - No significant difference in pain using VAS– one month o MD = -2.8 (95% CI -5.7 to 0.15)[153,154] - No significant difference in pain using VAS – three months o MD = -2.0 (95% CI -6.2 to 2.1) [153,154]	One-Month Visual Analog Scale (VAS): "*The efficacy of … [dry needling] … [was] not significantly different from placebo.*" (p. 862) "*In addition, there was a statistically significant superiority of … [dry needling] over placebo at 1-months ([surface under the cumulative ranking curve] of [dry needling] = 0.639).*" (p. 862) Three-Month Visual Analog Scale (VAS):

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
	"*[Dry needling] ranked higher than placebo ([surface under the cumulative ranking curve] = 0.100) in terms of [surface under the cumulative ranking curve] value.*" (p. 865)
Liu et al, 2019[9]	
Acupuncture versus Medicine for Stable Angina Pectoris: - Significantly lower incidence of ineffective angina relief (not defined) – length of follow-up not reported o RR= 0.35 (95% CI 0.22 to 0.55, p <0.00001)[143-149]	"*In conclusion, our meta-analysis indicated that acupuncture … may improve anginal symptoms … in patients with [stable angina pectoris].*" (p. 252)
Vier et al, 2019[10]	
Dry Needling versus Sham Dry Needling for Orofacial Myofascial Pain: - No significant difference in pain – up to three months o RR = -0.30 (95% CI -0.83 to 1.43)[70,79]	"*There is very low quality evidence that no statistically significant difference was found between [dry needling] and sham for short-term orofacial pain.*" (p. 8) "*[D]ue to the very low quality of evidence, DN cannot be strongly recommended over sham therapy or other interventions.*" (p. 10)
Xiang et al, 2019[11]	
Verum Acupuncture versus Sham or Placebo Acupuncture for Chronic Non-Specific Lower Back Pain: - Significant decrease in pain intensity VAS– after treatment o Standardized mean difference (SMD) = -0.35 (95% CI -0.55 to -0.14, p = 0.001) [92,93,96-99]	"*We found moderate evidence of benefit of acupuncture in patients with [chronic non-specific lower back pain], which was mostly observed post-treatment. Significant effects were demonstrated with respect to pain intensity … when compared with sham or placebo acupuncture.*" (p. 8) "*Trial authors are encouraged to use the CONSORT (Consolidated Standards of Reporting Trials) statement as a model for reporting their trials (www.consort-statement.org), and the STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture) criteria to report the interventions, in order to provide homogenous information for future SRs and meta-analysis. Second, lack of registration can be associated with inappropriate design and reporting of RCTs, which may seriously weaken the ability of RCTs to robustly examine the efficacy of acupuncture.*" (p. 9)
Zhang et al, 2019[12]	

Acupuncture versus Sham Acupuncture for Fibromyalgia:
- Significant decrease in pain intensity using VAS– after treatment
  o MD = -1.04 (95% CI-1.70 to -0.38, p = 0.002) – Moderate Quality of Evidence (inconsistency) [118,120,121,152,163-167]
- Significant decrease in pain intensity using VAS – after at least three months
  o MD = -1.58 (95% CI -2.72 to -0.44, p = 0.006) – Low Quality of Evidence (inconsistency and imprecision) [120,164,167]
 	
Manual Acupuncture versus Sham Manual Acupuncture for Fibromyalgia:
	"*In summary, real acupuncture was more effective than sham acupuncture in relieving pain … in both the short and long term. Both [electroacupuncture] and [manual acupuncture] were better than sham acupuncture in relieving pain in the short term. Furthermore, acupuncture was more effective in relieving pain in both the short and long term compared with conventional medication. No serious adverse events were found during acupuncture. In brief, acupuncture therapy is an effective and safe treatment for patients with [fibromyalgia], and it can be recommended for the management of [fibromyalgia].*" (p. 538-539)

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion

- Significant decrease in pain intensity using VAS – after treatment
  ○ MD = -1.14 (95% CI -2.18 to -0.09, p = 0.03) – Moderate Quality of Evidence[118,121,163-167]
- Significant decrease in pain intensity using VAS – after at least three months
  ○ MD = -2.06 (95% CI -3.49 to -0.63, p = 0.005) – Very Low Quality of Evidence[164,167]
 	
<u>Electroacupuncture versus Sham Electroacupuncture for Fibromyalgia</u>:
- Significant decrease in pain intensity using VAS – after treatment
  ○ MD = -0.94 (95% CI -1.17 to -0.72, p < 0.00001) – Low Quality of Evidence[120,152]
- No significant difference in pain intensity using VAS – after at least three months
  ◦ MD = -0.60 (95% CI -1.78 to 0.58, p = 0.32) – Low Quality of Evidence[120]
 	
<u>Acupuncture versus Conventional Medication for Fibromyalgia</u>:
- Significant decrease in pain intensity using VAS – after treatment
  ○ MD = -1.81 (95% CI -2.43 to -1.18, p < 0.00001) – Very Low Quality of Evidence (Risk of bias, imprecision and publication bias)[115,116]
- Significant decrease in pain intensity using VAS – after at least three months
  ○ MD = -2.11 (95% CI -2.97 to -1.25, p < 0.00001)[116]	

Li et al, 2018[4]	

<u>Acupuncture versus Sham Acupuncture for Osteoarthritis of the Knee</u>:
- Significant decrease in pain intensity using the Western Ontario and McMaster Osteoarthritis Index (WOMAC) pain score – length of follow-up not reported
  ○ MD = -0.68 (95% CI -1.06 to -0.31) [52,62,65,66]
 	
<u>Electroacupuncture versus Sham Acupuncture for Osteoarthritis of the Knee</u>:
- Significant decrease in pain intensity using WOMAC pain score – length of follow-up not reported
  ○ MD = -2.25 (95% CI -3.52 to -1.08) [49,50,57,61,150]
 	
<u>Acupuncture versus Waiting List for Osteoarthritis of the Knee</u>:
- Significant decrease in pain intensity using WOMAC pain score – length of follow-up not reported
  ○ MD = -3.01 (95% CI -4.71 to -1.31)[67]
 	
<u>Warm Needle Acupuncture versus Waiting List for Osteoarthritis of the Knee</u>:
	"*As a result, this [network meta-analysis] suggests that fire needle and electroacupuncture may be potential acupuncture methods to relieve the pain of patients with [knee osteoarthritis]*." (p. 17)
	
	"*Limited Methodological Quality of Included Studies: The methodological quality evaluation was low. Some Chinese RCTs did not describe blind method and follow-up time. Some English RCTs blind methods were not clear, which were prone to subjective bias. Individual study samples were less abundant. Although acupuncture was difficult to do blindly, we could also design a single blind between researchers, acupuncturists, and patients to improve the quality of evidence.*" (p. 17)
	
	"*Limited Measurements: Long-term efficacy had not yet been achieved in this [network meta-analysis]. Meanwhile, most of the articles failed to illustrate the adverse reactions and compliance; for example, whether the long-term effect of the fire needle and warm needle might cause skin damage to the joints, whether the acceptance would gradually decline, or*

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
- Significant decrease in pain intensity using WOMAC pain score – length of follow-up not reported o MD = -4.26 (95% CI -6.50 to -2.02)[175]	*whether the electro-acupuncture would give patients nerve fatigue in the long-term effect.*" (p. 17) "*Limited Experimental Design in Acupuncture: Acupuncture had a certain effect along with heat pain stimulation, but lacked accuracy. Like fire needle and warm needle, they did not have a precise temperature change setting and the depth of acupuncture in comparable baseline. Moreover, considering electro-acupuncture as another means of curative effect, many studies did not regulate its electrical stimulation frequency, duration, and depth. All in all, the risk of expected bias could always be magnified by irregular operations or the control design by blinding the control participants, different manipulations of doctors, or degree on content of compliance in patients, etc. Inconsistent follow-up time, treatment duration, and demographic characteristics could also result in heterogeneity of outcome.*" (p. 17)
Vickers et al, 2018[13]	
Acupuncture versus Sham Acupuncture for Osteoarthritis: - Significant decrease in pain (not defined) – length of follow-up not reported o SMD = 0.45 (95% CI 0.15 to -0.75)[49-57] Acupuncture versus Sham Acupuncture for Musculoskeletal Pain: - Significant decrease in pain (not defined) – length of follow-up not reported o SMD = 0.49 (95% CI 0.16 to 0.81) [89,92,93,99,155,183-187] Acupuncture versus Sham Acupuncture for Chronic Headache: - Significant decrease in pain (not defined) – length of follow-up not reported o SMD = 0.16 (95% CI 0.08 to 0.25)[138-142] Acupuncture versus Sham Acupuncture for Specific Shoulder Pain: - Significant decrease in pain (not defined) – length of follow-up not reported o SMD = 0.57 (95% CI 0.44 to 0.69)[82-85]	"*Heterogeneity continues to be an obvious aspect of our findings, with the results of trials varying by more than would be expected by chance. We have presented data that heterogeneity is predominately driven by differences between control groups rather than by differences between acupuncture treatment characteristics. We did not find any obvious differences between the results of trials depending on treatment characteristics such as style of acupuncture, duration of treatment sessions, or training of acupuncturists.*" (p. 465) "*We have confirmed that acupuncture has a clinically relevant, persistent effect on chronic pain that is not completely explained by placebo effects.*" (p. 469)
Woo et al, 2018[14]	
Manual Acupuncture versus Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) for Primary Dysmenorrhea: - No significant difference in pain intensity using VAS– one day o SMD = -0.47 (95% CI -0.98 to 0.05, p = 0.07) [132,136,168-170] - No significant difference in pain intensity using VAS – one menstrual cycle o SMD = -0.38 (95% CI -1.09 to 0.34, p = 0.31) [132,136,168-170] - Significant decrease in pain intensity using VAS – three menstrual cycles	"*[Manual acupuncture] was significantly more effective than … [nonsteroidal anti-inflammatory drugs] for reduction of menstrual pain and its associated symptoms. … The [manual acupuncture]-induced analgesic effect could be explained by C-fiber involvement during the practitioners' manipulation for the de-qi response. However, no significant difference was observed between [manual acupuncture] and placebo acupuncture or between [Manual acupuncture] and [oral contraceptives].*" (p. 15)

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
◦ SMD = -0.74 (95% CI -1.06 to -0.42, p < 0.00001) [132,136,168-170] - Significant decrease in pain intensity using VAS – overall ◦ SMD = -0.63 (95% CI -0.88 to -0.37, p < 0.00001) [132,136,168-170] <u>Electroacupuncture versus Placebo Acupuncture for Primary Dysmenorrhea</u>: - Significant decrease in pain intensity using VAS – length of follow-up not reported ◦ SMD = -0.32 (95% CI -0.63 to -0.01, p = 0.04)[188-193] <u>Warm Acupuncture versus Error! Reference source not found.s f or Primary Dysmenorrhea</u>: - Significant decrease in pain intensity using VAS – length of follow-up not reported ◦ SMD = -1.12 (95% CI -1.81 to -0.43, p = 0.002)[176-178]	"*The results showed that [electroacupuncture] was significantly more effective at reducing menstrual pain than … placebo. … The results comparing with [nonsteroidal anti-inflammatory drugs] were insufficient to determine the efficacy of [electroacupuncture]. The mechanism of [electroacupuncture]-induced analgesia could be explained by inducing the release of endorphins and the decrease of the pulsatility index in the uterine arteries, which might be related to primary dysmenorrhea.*" (p. 15) "*The reason that there was no difference between [manual acupuncture] and placebo acupuncture and the relatively small difference between [electroacupuncture] and placebo acupuncture was thought to be that placebo acupuncture also had positive effects. Several factors might explain the positive effects. First, some participants receiving placebo acupuncture may want pain relief, and it may affect the outcome psychologically. Second, placebo acupuncture may stimulate cutaneous touch receptors and/or skin nociceptors and modulate the activity in the brain areas associated with pain management.*" (p. 15) "*[Warm acupuncture] was significantly more effective at reducing menstrual pain than [nonsteroidal anti-inflammatory drugs], but the efficacy for the associated symptoms was inconclusive due to the small sample size. … [Warm acupuncture] increases the circulation of qi and blood through the needle body during thermal heating. It provides analgesic effects by stimulating nerve transfer and relaxing uterine muscle spasms.*" (p. 15) "*The applicability of acupuncture to primary dysmenorrhea in other settings is unclear. … The acupuncture practitioners might have different treatment skills according to the nations in which they were trained, and the participants might have different preconceptions and familiarity with acupuncture according their cultures. In addition, the variability of the details of interventions and controls could make applicability unclear.*" (p. 15) "*Our suggestions had limitations because the quality of the included RCTs was low, and methodological restriction existed in this study.*" (p. 16)
Li et al, 2017[5]	
<u>Dry Needling versus Placebo or Sham Acupuncture for Myofascial Pain Syndrome</u>: - Significant decrease in pain intensity using VAS or Numerical Rating Scale (NRS) – length of follow-up not reported ◦ SMD = -0.95 (95% CI -1.63 to -0.26, p = 0.01)[69,70,74,156,158] - Significant decrease in adverse events	"*There are several limitations in this network meta-analysis. Firstly, most included RCTs had different end points, most of which lasted less than 10 treatment sessions. Studies with more uniform periods of treatment would better support our conclusions. Secondly, most comparisons were performed based on only one or 2 small RCTs, and most results had wide credibility intervals, so the potential for bias should be*

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
○ Odds ratio (OR) = 96.33 (95% CI 3.42 to 2715.26, p = 0.01) [69,70,74,156,158] Manual Acupuncture versus Placebo or Sham Acupuncture for Myofascial Pain Syndrome: - No significant difference in pain intensity using VAS or Error! Reference source not found. – length of follow-up not reported ○ SMD = -1.25 (95% CI -2.52 to 0.03, p = 0.06) [72,75,171-174]	*acknowledged. This problem could be solved by more repetitive RCTs comparing different acupuncture therapies in the future. Thirdly, our results are based on the direct and the indirect comparisons between therapies; with the potential increased number of head-to-head trials in the future, some results may change.*" (p. 895)
Seo et al, 2017[15]	
Acupuncture versus NSAIDs for Chronic Neck Pain: - No significant difference in pain intensity using VAS **– length of follow-up not reported** ○ SMD = -.0.23 (95% CI -0.95 to 0.48, p = 0.52) – Moderate Quality of Evidence[113]	"*In the comparison of acupuncture vs. active control, pain, disability, and [quality of life] did not show a significant difference, which means that acupuncture exerts a similar amount of effect as the active control.*" (p.1589) "*However, since all the studies were published in China with a risk of bias, there needs to be additional large-scale clinical studies that are well designed before drawing out conclusions. Studies show that electroacupuncture is more effective in relieving neck pain in comparison to acupuncture, but the risk of bias prohibits clear conclusions. Especially since there an inadequate amount of literature for each analysis, and the number of candidates for each study was limited, lowering the credibility of the evidence. Therefore, the level of evidence for some of the outcome variables turned out to be moderate, but there were limits that lower the credibility of the studies to low and very low.*" (p. 1590)
Xu et al, 2017[16]	
Acupuncture versus NSAIDs for Primary Dysmenorrhea: - No significant difference in pain intensity using VAS – three months ○ MD = 1.24 (95% CI -3.37 to 5.85, p = 0.60)[135,136]	"*The limitations of this evaluation system are as follows: (1) most of the researches did not mention how the sample size was estimated, and most sample sizes were small, leading to a low inspection efficiency; (2) in some of the studies there was inadequate reporting of allocation concealment; implementing or not fully implementing allocation concealment will lead to an exaggerated curative effect; (3) the results were heterogeneous on account of their use of subjective indicators to evaluate the curative effect (symptom scores,VAS), so that implementation of the blinding method is important, but the included studies did not describe the implementation of the blinding method; (4) the study was limited to Chinese and English research, leading to the possibility of selection bias, and the terminology or the guidelines used in clinical managements might not be in the same language.*" (p. 10-11)
Yu et al, 2017[17]	
Electroacupuncture versus Sham Acupuncture (Irrelevant Acupoint) for Primary Dysmenorrhea: - Significant decrease in pain intensity using VAS – length of follow-up not reported	"*In terms of pain intensity, six studies reported positive results* *using the [visual analog scale], suggesting that [electroacupuncture] at SP6 acupoint had a significant immediate effect on menstrual pain compared with treatment-*

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
○ MD = 11.27 (95% CI 1.76 to 20.78, p = 0.02) [188,189,191,193-195] Electroacupuncture versus Sham Acupuncture (Nonacupoint) for Primary Dysmenorrhea: - Significant decrease in pain intensity using VAS – length of follow-up not reported ○ MD = 9.33 (95% CI 2.18 to 16.47, p = 0.01) [188,189,191,193-195] Electroacupuncture versus Waiting List for Primary Dysmenorrhea: - Significant decrease in pain intensity using VAS – length of follow-up not reported ○ MD = 27.15 (95% CI 13.74 to 40.55, p < 0.00001)[189,191,194]	*irrelevant acupoint (GB39), nonacupoint, and waiting-list control. The goal of therapy is to minimize the pelvic pain that starts with the onset of the menstrual flow. Currently, our results suggest that [electroacupuncture] stimulation at classic acupoint could alleviate the pain at once when compared with controls. The immediate analgesic effects of [electroacupuncture] may be associated with the activation of the endogenous opioid system, which has been supported by plenty of experimental evidence.*" (p. 7) "*First, our search did not include data in languages other than Chinese and English, which may generate a sampling bias. Further, although 4/9 trials were published in English, the populations involved in the included RCTs were all Chinese. No multicentered study with [primary dysmenorrhea] women of different races was gathered and thus [electroacupuncture] therapy for non-Chinese populations still remains uncertain. Second, the methodological quality of the included trials was often suboptimal. Randomization, blinding, sample-size calculation, and the handling of all data should be reported specifically, as these are the principal standards of rigorous study design. Although 7/9 studies described the specific methods of random sequence generation, only three studies declared allocation concealment. In addition, none of the included trials reported any details of blinding or the sample-size estimation. Low quality of the included studies may cause overestimation of the treatment effects and thus limit our confidence in the results of this meta-analysis.* *Third, a certain degree of heterogeneity was observed in some of the meta-analyses in this systematic review. To gain a more in-depth understanding of the overall evidence of [electrotherapy] for [primary dysmenorrhea], RCTs of different treatment schemes, time of application, duration of stimulation, and acupoints selected were included in our systematic review, which may give rise to clinical heterogeneity and thus may negatively affect our results.*" (p. 8-9) "*These results appear to be encouraging, but it should be considered at the same time that they are based on relatively low number of trials and relatively poor methodological quality of the primary studies.*" (p. 11)
Zhang et al, 2017[18]	
Acupuncture versus Oral Therapy for Chronic Knee Pain: - Significant decrease in pain intensity using WOMAC pain score – four weeks ○ MD = -3.21 (95% CI -4.81 to -1.61)[67] - Significant decrease in pain intensity using WOMAC pain score – eight weeks ○ MD = -4.12 (95% CI -5.77 to -2.47) [67]	"*the overall methodological quality of the included trials was not satisfactory. Some studies provided insufficient information to be able to evaluate the risk of bias. For instance, four studies did not clearly describe the specifics of randomization and allocation concealment was not mentioned in nine studies. Furthermore, many studies did not provide a published protocol or register it prior to execution.*" (p. 401)

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion

- Significant decrease in pain intensity using WOMAC pain score – twelve weeks
  o MD = -3.95 (95% CI -5.43 to -2.47) [67]
 	
<u>Electroacupuncture versus Etoricoxib (NSAID) for Chronic Knee Pain</u>:
- No significant difference in pain intensity using WOMAC pain score – four weeks
  o MD = -0.75 (95% CI -2.30 to 0.80)[150]
- Significant decrease in pain intensity using VAS – four weeks
  o MD = -15.25 (95% CI -25.70 to -4.80) [150]
 	
<u>Electroacupuncture versus Ibuprofen (NSAID) for Chronic Knee Pain</u>:
- Significant decrease in pain intensity using VAS – four weeks
  o MD = -3.70 (95% CI -6.08 to -1.32)[151]
	"*Firstly, all clinical trials should be prospectively registered in an openly-accessible national or international trial registry, such as ClinicalTrials.gov, which is a registry and results database of publicly and privately supported clinical studies of human participants conducted around the world. In this way, researchers can easily identify whether a trial is affected by selective reporting, incomplete outcome reporting or other limitations. While an appropriate control group is crucial for the design of future clinical acupuncture studies (including sham acupuncture, waiting list or control treatments), it would be helpful for comparison in systematic reviews for researchers to increase the homogeneity of control interventions and standardisation of time points measured. Finally, the outcome measurement tools should also be clinically validated in future studies.*" (p. 401)
	
	"*In this systematic review, based on the current available evidence, we can draw the conclusion that acupuncture only or as an adjunctive intervention may be effective for treating chronic knee pain at 12 weeks after acupuncture administration. In addition, the safety record is satisfactory for acupuncture intervention based on the analysed trials. However, given the heterogeneity and methodological limitations of the included trials, we are currently unable to draw any strong conclusions regarding the effectiveness and safety of acupuncture for chronic knee pain.*" (p.401)

Qin et al, 2016[6]	

<u>Electroacupuncture versus Sham Acupuncture for Chronic Prostatitis/Chronic Pelvic Pain Syndrome</u>:
- Significant decrease in pain intensity using NIH-CPSI pain score – length of follow-up not reported
  o SMD = 1.88 (95% CI 2.87 to 0.89) – Direct pair-wise meta-analysis[43,47]
  o SMD = 2.38 (95% CrI 0.33 to 4.43) – Network meta-analysis[43,47]
 	
<u>Electroacupuncture versus Placebo for Chronic Prostatitis/Chronic Pelvic Pain Syndrome</u>:
- Significant decrease in pain intensity using the NIH-CPSI pain score – length of follow-up not reported
  o SMD = 2.30 (95% CrI 0.03 to 4.63) – Network meta-analysis[43,47]
	"*The absolute effects and rank test indicated that electroacupuncture ranked the first, followed by dual therapy, antibiotics, alpha-blockers, acupuncture, sham acupuncture, and placebo.*" (p. 2)
	
	"*The incidence of adverse events of acupuncture was relatively rare (5.4%) compared with placebo (17.1%), alpha-blockers (24.9%), antibiotics (31%) and dual therapy (48.6%). Overall, rank tests and safety analyses indicate that electroacupuncture/acupuncture may be recommended for the treatment of [chronic prostatitis/chronic pelvic pain syndrome].*" (p. 1)

Qin et al, 2016[19]	
<u>Acupuncture versus Sham Acupuncture for Chronic Prostatitis/Chronic Pelvic Pain Syndrome</u>: - Significant decrease in pain intensity using NIH-CPSI pain score – length of follow-up ranged from eighteen to twenty-four weeks o SMD = -2.95 (95% CI -5.05 to -0.85, p = 0.006)[42-45]	"*First, although every study provided before-and-after treatment data, only 2 of them had the change in value as a primary outcome. Therefore, to calculate the difference of mean as well as the standard deviation, we estimated the missing data by assuming the correlation coefficient R was 0.5, a conservative value that leads to the highest variance.*

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
Acupuncture versus Medication for Chronic Prostatitis/Chronic Pelvic Pain Syndrome: - Significant decrease in pain intensity using NIH-CPSI pain score – length of follow-up ranged from eighteen to twenty-four weeks o SMD = -3.20 (95% CI -4.43 to -1.98, p < 0.0001)[45,47]	*Second, the mixture of different types of acupuncture, frequency of administration, duration of each session, and location of acupoints may have a potential impact on the effects of acupuncture. However, because the included trials were insufficient, it is difficult to conduct subgroup analysis or meta-regression to avoid this methodological limitation. All of the trials lacked the details of concealment and most of them did not provide adequate information on blinding either. Because of the characteristic of acupuncture, it is difficult to conduct blinding in patients, especially the trial that included a control group with drugs administered. However, for acupuncture, blinding to assessors is one of the cardinal methods to enable the generalizability of findings. Moreover, due to the lack of reporting on placebo-controlled trials that compare acupuncture to nonpenetrated acupuncture, placebo effects are impossible to eliminate. The specific effects of acupuncture needling are not well understood.*" (p. 8-9)
Rodriguez-Mansilla et al, 2016[20]	
Dry Needling versus Placebo for Myofascial Pain Syndrome: - No significant difference in pain intensity using VAS – length of follow-up not reported o MD = -0.49 (95% CI -3.21 to 0.42) [69,74,155-157]	"*[Dry needling] was less effective on decreasing pain comparing to the placebo group.*" (p. 1) "*due to the heterogeneity of the studies, the limited number of interventions carried out (corticosteroids injections, continuous ultrasound therapy, etc), the variability of the sample … and the few studies included in this review, it is difficult to confirm that [dry needling] is an effective treatment in the management of [myofascial pain syndrome].*" (p. 10)
Smith et al, 2016[21]	
Acupuncture versus Sham or Placebo Acupuncture for Primary Dysmenorrhea: - Pain (not defined) – length of follow-up not reported o Data unsuitable for calculation of means – Low Quality of Evidence (risk of bias, inconsistency)[122-124] - Adverse Events (not defined) – length of follow-up not reported o No studies reported adverse events[122-124] Acupuncture versus NSAID s for Primary Dysmenorrhea: - Pain (not defined) – length of follow-up not reported o Continuous data unsuitable for pooling – Low Quality of Evidence (risk of bias, publication bias)[125-134] - Significant decrease in pain relief (not defined) – length of follow-up not reported o OR = 4.99 (95% CI 2.82 to 8.82, p < 0.00001) [125-134] - Significant decrease in adverse events (not defined) – length of follow-up not reported o OR = 0.10 (95% CI 0.02 to 0.44) – Low Quality of Evidence (risk of bias, imprecision) [125-134]	"*There is insufficient evidence to demonstrate whether or not acupuncture or acupressure are effective in treating primary dysmenorrhea and for most comparisons no data were available on adverse events. The quality of the evidence was low or very low for all comparisons. The main limitations were risk of bias, poor reporting, inconsistency and risk of publication bias.*" (p. 2) "*Acupuncture versus sham or placebo control (6 RCTs): Findings were inconsistent and inconclusive. However, the only study in the review that was at low risk of bias in all domains found no evidence of a difference between the groups at three, six or 12 months. The overall quality of the evidence was low. No studies reported adverse events.*" (p. 2) "*Acupuncture versus [Nonsteroidal Anti-Inflammatory Drugs]: Seven studies reported visual analogue scale (VAS) pain scores, but were unsuitable for pooling due to extreme heterogeneity (IM = 94%). In all studies the scores were lower in the acupuncture group, with the mean difference*

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion

Acupuncture versus Combined Oral Contraceptives for Primary Dysmenorrhea:
- No significant difference in pain relief (not defined) – length of follow-up not reported
  ○ OR = 0.39 (95% CI 0.12 to 1.21, p = 0.1)[137]
- No significant difference in adverse events (not defined) – length of follow-up not reported
  ○ OR = 1.12 (95% CI 0.34 to 3.63, p = 0.01) [137]
	varying across studies from 0.64 to 4 points on a VAS 0 - 10 scale (low-quality evidence). Four RCTs reported rates of pain relief, and found a benefit for the acupuncture group (OR 4.99, 95% CI 2.82 to 8.82, 352 women, IM = 0%, low-quality evidence). Adverse events were less common in the acupuncture group (OR 0.10, 95% CI 0.02 to 0.44, 4 RCTs, 239 women, 4 trials, IM = 15%, low-quality evidence)." (p. 2)

Yuan et al, 2016[22]	

Acupuncture versus Sham Acupuncture for Chronic Neck Pain:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ◦ SMD = -0.40 (95% CI -0.61 to -0.19, p < 0.001) [106,108-112]
 	
Acupuncture versus Sham Acupuncture for Chronic Lower Back Pain:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = -0.47 (95% CI -0.76 to -0.19, p = 0.001) [89-96]
 	
Acupuncture versus Sham Acupuncture for Knee Osteoarthritis:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = -0.88 (95% CI -1.28 to -0.49, p < 0.001) [49-51,53-55,59-64]
 	
Acupuncture versus Sham Acupuncture for Hip Osteoarthritis:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = -0.66 (95% CI -1.16 to -0.16, p = 0.01)[68]
 	
Acupuncture versus Sham Acupuncture for Hip and Knee Osteoarthritis:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = -0.77 (95% CI -1.12 to -0.41, p < 0.001)[58]
 	
Acupuncture versus Sham Acupuncture for Myofascial Pain:
- Significant decrease in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = -1.00 (95% CI -1.43 to -0.57, p < 0.001)[69-81]
 	
Acupuncture versus Sham Acupuncture for Fibromyalgia:
- No significant difference in pain intensity (not defined) – immediate-term (within one week)
  ○ SMD = 0.01 (95% CI -0.35 to 0.37, p = 0.957)[117-121]
	"*Our review provided low-quality evidence that real acupuncture has a moderate effect (approximate 12-point reduction on the 100-mm visual analogue scale) on musculoskeletal pain.*" (p. 1)
	
	"*Based on currently available evidence, our meta-analysis found that, overall, acupuncture was superior to [sham acupuncture] in terms of pain relief and disability reduction for patients with musculoskeletal disorders.*
	However, acupuncture was superior to [sham acupuncture] for pain relief in only some of the individual conditions (chronic [neck pain], … chronic [lower back pain], [osteoarthritis], and [myofascial pain]). There were no differences between the groups for [fibromyalgia]." (p. 15,17)
	
	"*We found a difference among the continent subgroups. The treatment effect in China was superior to that in other countries. The following speculations might account for this finding: acupuncture originated in China and was based on a set of relevant theories and practice experiences; and acupuncturists from China and adjacent countries usually had a five-year course of study. Additionally some other factors, such as psychological effect and publication bias, might also play a role in this difference.*" (p. 17)
	
	"*The pooled [standard mean differences] after 2009 was larger than it was before this date, which might have been the beneficial result of recent guidelines for quality control of acupuncture (STRICTA). This indicates that a good quality control of clinical acupuncture trial is needed.*" (p. 17)
	
	"*The main weakness of this study was the relative paucity of high-quality RCTs. About half of the trials did not perform [intention to treat] analyses or correct allocation concealment. None of the studies blinded the caregivers because of the intrinsic characteristics of acupuncture.*" (p. 20)

Ji et al, 2015[23]	

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
Acupuncture versus Medication for Sciatica: - Significant decrease in pain intensity using VAS– length of follow-up not reported ○ MD = -1.25 (95% CI -1.63 to -0.86, p < 0.00001)[86-88]	"*Despite an extensive literature search, only a limited number of studies were available, hampering clear and exact conclusions. Most of the randomized controlled trials had low methodological quality with a high risk of bias. All selected trials demonstrated randomization; however, the processes of randomization and allocation concealment were not adequately described and blinding of patients and assessors was seldom mentioned. Only three trials mentioned random sequence generation and only one demonstrated allocation concealment, with none of the trials being blinded. Therefore, selection bias may have existed. For those studies without adequate explanation of quality control measures, it is difficult to rule out the possibility of selective bias, implementation bias, and measurement bias, which may lead to unreliable results.*" (p. 9-10) "*From our meta-analysis, it is evident that acupuncture could be efficacious in treating the pain associated with sciatica. Although we were unable to draw definite conclusions due to the poor quality of the available trials, this positive result could provide clinicians with an accessible assessment of its therapeutic value and draw attention to acupuncture research.*" (p. 11)
Liu et al, 2015[24]	

Dry Needling versus Sham and Placebo Dry Needling for Myofascial Trigger Points (Neck and Shoulder Pain):
- Significant decrease in pain intensity using VAS or NRS – short-term effects (immediately to three days)
  ○ SMD = -1.91 (95% CI -3.10 to -0.73, p = 0.002) [69,72-74,159,160]
- Significant decrease in pain intensity using VAS or NRS – medium-term effects (nine to twenty-eight days)
  ○ SMD = -1.07 (95% CI -1.87 to -0.27, p = 0.009)[69,108,112,156,161,162]
- No significant difference in pain intensity using VAS or NRS – long-term effects (two to six months)
  ○ SMD = -1.15 (95% CI -3.34 to 1.04, p = 0.30)[108,156]
	"*Dry needling can be recommended for relieving [myofascial trigger point] pain in neck and shoulders in the short and medium term.*" (p. 944)
	
	"*Compared with control/sham, dry needling resulted in significant improvement, specifically in the short and medium term.*" (p. 952)
	
	"*Comparing dry needling with control/sham, we found that the [standardized mean difference] in the short term was 1.91cm, which was greater than the 1.3cm/1.4cm minimum clinically important difference (MCID) reported by Bijur et al. Moreover, a statistically significant difference in the short term was found when dry needling was compared with control/sham. Therefore, this review found sufficient evidence to support the claim that dry needling has significant clinical effects on [myofascial trigger points] associated with neck and shoulder pain in the short term as compared with control/sham. In addition, the [standardized mean difference] in the medium term was 1.07cm, which was lower than the reported 1.3cm/1.4cm [minimum clinically important difference]; and a statistically significant difference in the medium term was found when dry needling was compared with control/sham. However, no statistically significant difference in the long term was found when dry needling was compared with control/sham.*" (p. 952)

Table 8: Summary of Findings Included Systematic Reviews and Meta-Analyses

Main Study Findings	Authors' Conclusion
	"*In this systematic review, high heterogeneity was observed for most meta-analyses in the forest plots. High heterogeneity for these meta-analyses may be explained by clinical diversity (including some differences in subjects, different inclusion criteria between these studies, variance in the comparison treatments, and variance in the outcome measures) and methodological diversity (such as the design of random trial, use of blinding, and concealment of allocation).*" (p. 953)
Yuan et al, 2015[25]	
<u>Acupuncture versus Sham Acupuncture for Chronic Neck Pain</u>: - Significant decrease in pain intensity using VAS – immediate term (less than or equal to one week) o Weighted Mean Difference (WMD) = -0.58 (95% CI -0.94 to -0.22)[78,106-111] - Significant decrease in pain intensity using VAS – one month o WMD = -0.72 (95% CI -1.07 to -0.37)[109,111] - No significant difference in pain intensity using VAS – three months of follow-up o WMD = -0.32 (95% CI -0.68 to 0.04)[109-111] <u>Acupuncture versus Medications for Chronic Neck Pain</u>: - Significant decrease in pain intensity (not defined) – immediate term (less than or equal to one week) o SMD = -0.57 (95% CI -1.14 to -0.01)[78,100,101,114] <u>Acupuncture versus Sham Acupuncture for Chronic Low Back Pain</u>: - Significant decrease in pain intensity (not defined) – immediate-term (less than or equal to one week) o SMD = -0.49 (95% CI -0.76 to -0.21)[89-94,96-98] - Significant decrease in pain intensity (not defined) – short-term (less than or equal to three months) o SMD = -0.45 (95% CI -0.76 to -0.14)[89,90,92,93,97,98] - Significant decrease in pain intensity (not defined) – intermediate-term (three to twelve months) o SMD = -0.17 (95% CI -0.28 to -0.05)[89,92,94,98] <u>Acupuncture versus Medications for Chronic Low Back Pain</u>: - No significant difference in pain intensity using VAS – length of follow-up not reported o WMD = -0.31 (95% CI -1.36 to 0.75)[100-105]	"*All the treatments showed positive effectiveness compared with baseline measurements. Compared with sham acupuncture (SA), acupuncture may be more effective in reducing pain and disability in the immediate and one-month term for individuals with [chronic neck pain]. … Similarly, these differences in immediate-term and short-term outcomes about pain also existed for individuals with [chronic low back pain], but no difference about disability. … Nevertheless, the difference in clinical importance between acupuncture and [sham acupuncture] was small. The [sham acupuncture] group was used to estimate the specificity of the acupuncture points and of the technique itself. However, a standardized [sham acupuncture] has not yet been established. Therefore, it has been a challenge for researchers to choose the correct acupoints for the [sham acupuncture] group. As a result, the effect of true acupuncture will be underestimated. Thus, various degrees of efficacy were observed in different studies.*" (p. 29) "*Our review has several main limitations, which were due to the studies included. First, we found that the number of studies was small. …Thus, further studies in these areas are warranted. Second, the strength of the evidence was low or moderate rather than high, which means that the results may change through further research.*" (p. 30)

CI= Confidence Interval, CrI= Credible Interval, SR= Systematic Review, MA= Meta-Analysis, NMA= Network Meta-Analysis, RCT= Randomized Controlled Trial, NS= Non-Randomized Study, VAS= Visual Analog Scale, NRS= Numerical Rating Scale, NIH-CPSI= National Institutes of Health Chronic Prostatitis Symptom Index, WOMAC= Western Ontario and McMaster Osteoarthritis Index, SMD= Standardized Mean Difference, WMD= Weighted Mean Difference, MD= Mean Difference, RR = Relative Risk, OR = Odds Ratio

Table 9: Summary of Findings of Included Economic Evaluation

Main Study Findings	Authors' Conclusion
Toroski et al, 2018[27]	
Electroacupuncture versus Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) for Chronic Low Back Pain: "*Cost analysis showed that the direct medical cost per patient was the main cost share (56.6% when treated by [electroacupuncture] and 61.7% in treatment by NSAIDs) in these two treatment options for [chronic low back pain], and nonmedical direct costs was the smaller share (9.6% when treated by [electroacupuncture] and 4.1% in treatment by NSAIDs). There was a significant difference in mean utility and total treatment costs per patient between [electroacupuncture] and NSAIDs methods (p < 0.05).*" (p. 64) "*The ACER for [electroacupuncture] therapy was 134.64 units less than the ACER for treatment by NSAIs. Effectiveness (utility) of [electroacupuncture] was about 0.07 units more than the effectiveness of NSAIDs, while the mean costs of [electroacupuncture] per patient was about 36.29 dollars less than that of NSAIDs. Therefore, the incremental cost-effectiveness ratio of [electroacupuncture] versus NSAIDs was negative. This implies that [electroacupuncture] in comparison with NSAIDs is a dominant treatment option, and NSAIDs in comparison with [electroacupuncture] are not dominant treatment options.*" (p. 65)	"*Analyses of this study demonstrated that ACER for [electroacupuncture] was less than ACER for NSAIDs, while [cost-utility analysis] showed that [electroacupuncture] in comparison with NSAIDs was the dominant option for treatment of patients with [chronic low back pain].*" (p. 64) "*The findings of this study demonstrated that [electroacupuncture] was more cost-effective than NSAIDs.*" (p. 65)
Electroacupuncture versus NSAIDs: **Electroacupuncture** - Utility = 0.70 - Cost per patient = $461.48 US Dollars - ACER = 659.26 **NSAIDs** - Utility = 0.627 - Cost per patient = $497.77 US Dollars - ACER= 793.9	

ACER= Average Cost-Effectiveness Ratio, NSAID= Nonsteroidal Anti-Inflammatory Drugs.

Table 10: Summary of Recommendations in Included Guidelines

Recommendations and Evidence Summary	Strength of Evidence and Recommendations
American College of Rheumatology / National Psoriasis Foundation (ACR/NPF), 2019[29]	
Active Psoriatic Arthritis "*Recommend acupuncture over no acupuncture.*" (p. 26)	Very low - "*conditional recommendation means that the panel believed the desirable effects of following the recommendation probably outweigh the undesirable effects, so the course of action would apply to the majority of the patients, but a small proportion of clinicians/patients may not want to follow the recommendation.*" (p. 10) - "*Conditional recommendation based on very-low-quality evidence; may consider no acupuncture due to associated costs.*" (p. 26)
Cleveland (Ohio) Clinic Family Medicine Residency (CC), 2019[2]	
Chronic Low Back Pain "*For chronic low back pain, acupuncture is significantly more effective clinically in the short term than sham acupuncture; both verum and sham acupuncture have large placebo responses.*" (p. 93)	"*A = consistent, good-quality patient-oriented evidence.*" (p. 93) - "*Consistent findings from multiple systematic reviews of RCTs.*" (p. 93)
Knee Osteoarthritis "*For knee osteoarthritis, acupuncture and sham acupuncture both have clinically significant effects. Acupuncture can be an effective treatment for knee osteoarthritis in the short term.*" (p. 93)	"*B = inconsistent or limited-quality patient-oriented evidence.*" (p. 93) - "*Network meta-analysis of RCTs with varying thresholds for clinical significance and high risk of bias.*" (p. 93)
Chronic Headache / Migraine "*Acupuncture is effective in reducing frequency of chronic daily idiopathic or tension headaches.*" (p. 93)	"*A = consistent, good-quality patient-oriented evidence.*" (p. 93) - "*Consistent findings in a Cochrane review of 12 RCTs.*" (p. 93)
"*Acupuncture reduces the frequency of episodic migraines about as well as drug prophylaxis.*" (p. 93)	"*A = consistent, good-quality patient-oriented evidence.*" (p. 93) - "*Consistent findings from multiple systematic reviews of RCTs.*" (p. 93)
Myofascial Pain Syndrome "*Dry needling of trigger points associated with myofascial pain syndromes can be effective in the short term for pain relief and improved range of motion.*" (p. 93)	"*B = inconsistent or limited-quality patient-oriented evidence.*" (p. 93) - "*Systematic reviews of dry needling for different pain conditions; variable quality studies.*" (p. 93)
Safety of Acupuncture "*Acupuncture is safe and well tolerated, and significant adverse effects are uncommon.*" (p. 93)	"*A = consistent, good-quality patient-oriented evidence.*" (p. 93) - "*Overview of 17 systematic reviews of adverse events with consistent*

Table 10: Summary of Recommendations in Included Guidelines

Recommendations and Evidence Summary	Strength of Evidence and Recommendations
	results; serious adverse effects may occur in as few as one in 100,000 needles inserted." (p. 93**)**
Canadian Urological Association (CUA), 2018[30]	
Chronic Scrotal Pain "Acupuncture (Grade 4D): *Extrapolating from reports on men with [chronic pelvic pain syndrome], acupuncture may also represent a safe and potentially efficacious therapy for [chronic scrotal pain]. In one pilot study, patients with [chronic pelvic pain syndrome] underwent two acupuncture sessions weekly for a total of eight weeks. A significant decrease in NIH-CPSI scores were found in more than half of the patients. Further study is required to determine the translatability of these results to the specific [chronic scrotal pain] population.*" (p. 165)	"*Level 4 Evidence, Grade D Recommendation.*" (p. 165)
American College of Physicians (ACP), 2017[31]	
Chronic Low Back Pain "*For patients with chronic low back pain, clinicians and patients should initially select nonpharmacologic treatment with … acupuncture.*" (p. 514)	"*Moderate-quality evidence … Grade: strong recommendation.*" (p. 514)
"*Low-quality evidence showed that acupuncture was associated with moderate improvement in pain relief immediately after treatment and up to 12 weeks later compared with sham acupuncture, but there was no improvement in function. Moderate-quality evidence showed that acupuncture was associated with moderately lower pain intensity and improved function compared with no acupuncture at the end of treatment. Low-quality evidence showed a small improvement in pain relief and function compared with medications (NSAIDs, muscle relaxants, or analgesics).*" (p. 519)	"*Strong = Benefits Clearly Outweigh Risks and Burden or Risks and Burden Clearly Outweigh Benefits.*" (p. 515)
Belgian Health Care Knowledge Centre (KCE), 2017[32]	

Chronic Low Back Pain
"*No recommendation on acupuncture has been formulated.*" (p.76)
- "*After discussion in the Belgian GDG meeting, a consensus was reached not to formulate a recommendation on the use of acupuncture in low back patients. Following issues were the basis for this decision:*
  ○ *The difference between the NICE 2009 and the 2016 recommendation (going from a pro to an against recommendation)*
  ○ *No clear superior effect of acupuncture versus sham*
  ○ *No evidence available on harmful effects*
  ○ *Not sufficient evidence on the potential benefits and harms to formulate a clear recommendation. Not formulating a recommendation gives the clinician more free choice to offer acupuncture to his/her patient, if needed. As a reminder, in a previous KCE-report it was recommended that only certain clinicians could perform acupuncture (physicians, physiotherapists, nurses and midwives).*
  ○ *No preference for a research recommendation.*" (p. 76)
	"*Recommendation: No recommendation on acupuncture has been formulated. Strength of Recommendation: N/A Level of Evidence: N/A*" (p. 76)

Canadian Pain: Spinal Cord Injury Working Group (CanPain SCI), 2016[33]	
Neuropathic Pain – Spinal Cord Injury "*[CanPain SCI] evaluated one therapy, acupuncture, with conflicting evidence of benefit for reduction in the intensity of [spinal cord injury]-related [neuropathic pain]. Meta-analysis was not possible because of the absence of comparable data between studies."* (p. S19) "*Acupuncture. One study showed no significant effect on chronic pain intensity in patients with SCI-related pain or chronic musculoskeletal pain; non-responders were*	No recommendation formulated. "*Needs Further Research*" (p. S20)

Table 10: Summary of Recommendations in Included Guidelines

Recommendations and Evidence Summary	Strength of Evidence and Recommendations
all from the central pain population. In another study, 8 of 15 patients with SCI-related NP responded to acupuncture.52 A retrospective observational case series of patients with traumatic or nontraumatic SCI found a significant improvement in pain for bilateral, for bilateral, symmetric, burning or constant pain compared with unilateral, asymmetric, atypical or intermittent pain. Studies of acupuncture suffer from a lack of standardization of process or procedure delivery and practice principles, and evidence for effectiveness is inconclusive. Additional studies are needed to clarify the benefit of using this modality." (p. S19)	
Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration, 2016[34]	
Neck Pain and Associated Disorders (NAD) Grades I-II of >3 Months Duration "*For [neck pain and associated disorders] grades I-II >3 months duration: … In view of evidence of no effectiveness, clinicians should not offer … electroacupuncture.*" (p. 2001) "*Acupuncture: Clinicians should not offer electroacupuncture. This recommendation is based on one low risk of bias RCT that found similar outcomes between electroacupuncture and simulated acupuncture for [whiplash-associated disorders] of variable duration.*" (p. 2014)	"*Interventions that are not recommended did not satisfy the criteria of one or more key decision determinants (i.e., evidence of effectiveness, safety, cost-effectiveness, and/or consistency with societal and ethical values).*" (p. 2007)
Prostatitis Expert Reference Group (PERG), 2015[35]	
Chronic Prostatitis/Chronic Pelvic Pain Syndrome "*The following specialist physiotherapy treatment options may be considered: … acupuncture for trigger point release and pain management.*" (p. 521) - "*Small pilot studies of acupuncture in patients with [chronic prostatitis/chronic pelvic pain syndrome] refractory to standard pharmacotherapy have provided positive results; in 12 men, a 6-week acupuncture regimen (given twice weekly), achieved a significant decrease in total, pain, urinary and [quality of life] NIH-CPSI scores after an average 33 weeks follow-up (P < 0.05). Similarly, symptom improvements, as assessed by the NIH-CPSI, were seen with a 5-week and 6-week course of acupuncture (on the bilateral BL33 region), with improvements in pain, voiding symptoms and [quality of life] in non-inflammatory [chronic prostatitis/chronic pelvic pain syndrome]. Randomised, sham-controlled studies (n = 39–89) support these results; a 10-week course of acupuncture proved almost twice as likely as sham treatment to improve [chronic prostatitis/chronic pelvic pain syndrome] symptoms, while a three-arm trial showed that after 6 weeks of electro-acupuncture, the NIH-CPSI total score had decreased significantly vs the sham and advice and exercise groups alone (P < 0.001). A recent review of the evidence on the use of acupuncture in prostatitis concluded that the findings should encourage healthcare providers to use acupuncture to manage pain in [chronic prostatitis/chronic pelvic pain syndrome], in conjunction with standard treatment.*" (p. 516)	Level 5 "*Mechanism-based reasoning, expert committee reports or opinions or clinical experience of respected authorities.*" (p. 510)
Department of Veterans Affairs and the Department of Defense (VA/DoD), 2014[36]	
Pain-Predominant Chronic Multisymptom Illness (CMI) "*The guideline panel recommends considering acupuncture as part of the management of patients with pain-predominant symptoms of [chronic multisymptom illness]. (Weak For)*" (p. 42) "*Although the quality of evidence is low for acupuncture, there is some evidence of benefit for pain reduction. As with all interventions, acupuncture can be a component of a personalized proactive, patient-driven model of care, with shared decision making. Unfortunately, there is little evidence currently available on the use of complementary and integrated medicines for [chronic multisymptom illness]. Furthermore, much of the current research on acupuncture discusses short-term rather than long-term effects. There is a lack of high quality evidence on the long-term effects of acupuncture, along with some of the potential cost implications that*	Weak For

Table 10: Summary of Recommendations in Included Guidelines

Recommendations and Evidence Summary	Strength of Evidence and Recommendations
this treatment can carry for both the patient and the health care system overall. The guideline panel emphasizes the need for more research in this area." (p. 42)	
Studies Comparing Acupuncture to Sham Acupuncture: "*Langhorst et al. performed a review of the literature and meta-analysis on the benefits and harms of acupuncture for [fibromyalgia syndrome]. The evidence base for this review consisted of seven RCTs enrolling a total of 242 adults. Most patients across the studies were female (median percent female 95%). All studies used traditional Chinese acupuncture points, with two studies utilizing standardized points and five studies utilizing an individualized paradigm. Two trials performed electro-acupuncture and five trials performed manual acupuncture. The length of the interventions, excluding follow-up, ranged from 2 to 15 weeks with a median of eight weeks. The median duration of acupuncture treatment was nine sessions (range 6–25). The control condition across all studies was sham or simulated acupuncture. The standardized mean difference was calculated in order to estimate the summary effect size for the following outcomes: pain, fatigue, sleep disturbances, and physical function. The findings demonstrated a small, but significant effect of acupuncture compared to sham for reducing pain (-0.25; 95% CI[-0.49 to -0.02]; p = 0.04) at post-treatment. The positive effect of acupuncture compared to sham was not observed at later follow-up times. No significant differences were observed between acupuncture and sham for fatigue, sleep disturbances, and physical function at post-treatment or at later follow-up times. Three studies reported on side effects such as discomfort at side of needle sensation, nausea, soreness and worsening of [fibromyalgia syndrome] symptoms. The frequency of the side effects reported ranged from 3% to 70% for all types of acupuncture.*" (p. 53)	
Studies Comparing Acupuncture to Conventional Medicine: "*Cao et al. performed a review of the literature and meta-analysis on the benefits and harms of Traditional Chinese Medicine (TCM) therapies for [fibromyalgia syndrome]. A total of three RCTs enrolling 73 patients compared acupuncture to conventional medicine. Two studies compared acupuncture to amitriptyline, and one study compared acupuncture to ibuprofen. The mean age range of the patients enrolled in the studies was 31 to 50 years. The gender of the patients enrolled in the studies was not reported. Duration of treatment ranged from four to eight weeks. The mean difference was calculated as an estimated summary effect size for pain, which was measured using the Visual Analog Scale. Data for other outcomes considered in the studies comparing acupuncture to conventional medicine (e.g., quality of life, depression, or anxiety) were not reported in a manner that allowed for a meta-analysis to be performed. The results of the analysis indicated that acupuncture was significantly better than conventional medication in reducing pain ([mean difference], -1.78; 95% CI-2.24 to -1.32, p <0.00001). The reported adverse effects of acupuncture were bruising, nausea, fainting, discomfort at the sites of needle insertions or simulated needle insertions, and temporary edema of the hand. Lethargy, nausea, fainting, dry mouth, fatigue, blurred vision, hyperhydrosis, and constipation were reported adverse effects of conventional medications.*" (p. 43)	

CI= Confidence Interval, CrI= Credible Interval, SR= Systematic Review, MA= Meta-Analysis, NMA= Network Meta-Analysis, RCT= Randomized Controlled Trial, NS= Non-Randomized Study, VAS= Visual Analog Scale, NRS= Numerical Rating Scale, NIH-CPSI= National Institutes of Health Chronic Prostatitis Symptom Index, WOMAC= Western Ontario and McMaster Osteoarthritis Index

Appendix 5: Overlap between Included Systematic Reviews

Table 11: Primary Study Overlap between Included Systematic Reviews

Primary Study Citation*	Systematic Review Citation																					
	Al-Bloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016a[6]	Qin et al, 2016b[19]	Rodriguez-Mansilla et al, 2016[20]	Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]
Kucuk et al, 2015[47]		X														X	X						
Sahin et al, 2015[42]		X														X	X						
Song et al, 2015[193]										X				X									
Liu et al, 2014[189]										X				X									
Chen et al, 2013[57]								X	X														
Cho et al, 2013[98]						X																	X
Kiran et al, 2013[136]										X			X										
Tekin et al, 2013[69]											X							X		X		X	
Wang et al, 2013[132]										X									X				
Diracoglu et al, 2012[70]					X						X									X			
Mavrommatis et al, 2012[55]									X											X			

Table 11: Primary Study Overlap between Included Systematic Reviews

Primary Study Citation*	Systematic Review Citation																					
	Al-Bolushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016a[6]	Qin et al, 2016b[19]	Rodriguez-Mansilla et al, 2016[20]	Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]
Chou et al, 2011[73]																				X		X	
Liang et al, 2011[111]																				X			X
Liu et al, 2011[188]										X				X									
Shi et al, 2011[191]										X				X									
Suarez-Almazor et al, 2010[54]									X											X			
Tough et al, 2010[112]																				X		X	
Tsai et al, 2010[74]											X							X		X		X	
Chou et al, 2009[72]											X									X		X	
Fu et al, 2009[109]																				X			X
Lee & Lee, 2009[43]		X														X	X						
Miyazaki et al, 2009[96]						X														X			X
Jubb et al, 2008[61]								X												X			
Lee et al, 2008[44]		X														X	X						
Foster et al, 2007[53]									X											X			

Table 11: Primary Study Overlap between Included Systematic Reviews

Primary Study Citation*	Systematic Review Citation																					
	Al-Bolushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016a[6]	Qin et al, 2016b[19]	Rodriguez-Mansilla et al, 2016[20]	Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]
Haake et al, 2007[89]									X											X			X
Itoh et al, 2007[108]																				X		X	X
Shen & Goddard, 2007[75]											X									X			
Brinkhaus et al, 2006[92]						X			X											X			X
Inoue et al, 2006[91]																				X			X
Itoh et al, 2006[90]																				X			X
Martin et al, 2006[120]							X													X			
Scharf et al, 2006[52]								X	X														
Assefi et al, 2005[121]							X													X			
Harris et al, 2005[118]							X													X			
Witt et al, 2005[51]									X											X			
Berman et al, 2004[49]								X	X											X			
Ilbuldu et al, 2004[156]											X							X				X	
Itoh et al, 2004[97]						X																	X

Table 11: Primary Study Overlap between Included Systematic Reviews

Primary Study Citation*	Systematic Review Citation																					
	Al-Boloushi et al, 2019[7]	Franco et al, 2019[8]	Li et al, 2019[3]	Liu et al, 2019[9]	Vier et al, 2019[10]	Xiang et al, 2019[11]	Zhang et al, 2019[12]	Li et al, 2018[4]	Vickers et al, 2018[13]	Woo et al, 2018[14]	Li et al, 2017[5]	Seo et al, 2017[15]	Xu et al, 2017[16]	Yu et al, 2017[17]	Zhang et al, 2017[18]	Qin et al, 2016a[6]	Qin et al, 2016b[19]	Rodriguez-Mansilla et al, 2016[20]	Smith et al, 2016[21]	Yuan et al, 2016[22]	Ji et al, 2015[23]	Liu et al, 2015[24]	Yuan et al, 2015[25]
Vas et al, 2004[50]								X	X											X			
Kerr et al, 2003[99]						X			X														
Leibing et al, 2002[94]																				X			X
Molsberger et al, 2002[93]						X			X											X			X
Sangdee et al, 2002[150]								X							X								
Zhu & Polus, 2002[106]																				X			X
Irnich et al, 2001[155]									X									X					
Berman et al, 1999[67]								X							X								
Birch & Jamison, 1998[78]																				X			X
McMillan et al, 1997[79]					X															X			
Takeda & Wessel, 1994[62]								X												X			

*Note: Not a comprehensive list of all primary studies included in each systematic review, only primary studies which overlap are presented here