

A comprehensive meta-analysis of traditional Chinese and Western medicine for neck and low back pain

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Abstract. – OBJECTIVE: The objective of this study was to systematically evaluate the application of Chinese medicine in the treatment of neck and low back pain. The goal was to assess the efficacy, analgesic effect, and safety of Chinese medicine using Cochrane system evaluation standards and conduct a meta-analysis to provide high-quality, evidence-based medical data for clinical practice decision-making.

MATERIALS AND METHODS: A comprehensive search was conducted in Chinese and English databases, including CBM, CNKI, Wanfang Data Knowledge Service Platform, VIP Chinese Science and Technology Periodical Database, Pubmed, Embase, and the Cochrane Library. The search encompassed randomized controlled trials on the use of Chinese medicine for pain treatment, with a time range from the establishment of each database to October 1, 2021. We have added the referred literature from the online databases for this research. Two researchers independently reviewed the literature, gathered data, and assessed the methodological quality of the included studies using the Cochrane Assistance Network risk of bias tool. Safety, reaction rate, and VAS pain score were of interest. To evaluate Chinese medicine's curative and analgesic benefits for pain illnesses, RevMan 5.4 and Stata 15.1 were used to analyze selected literature using forest plots, funnel plots, Egger and Harbord linear regression plots, and star charts.

RESULTS: Chinese medicine treated pain in 57 investigations. The analysis yielded (1) a curative effect: Chinese medicine outperformed Western medicine, with no publication bias. The sensitivity analysis matched the meta-analysis that has been performed in this work, and it shows that Chinese medicine treated low back pain better than Western medicine. (2) Analgesic effect: Chinese medicine outperformed Western medicine in analgesia, although the literature is limited for such a claim. Chinese medicine was also more analgesic than Western medicine. (3) Safety: No major side effects were reported in 20 investigations on Chinese medicine's safety.

CONCLUSIONS: This study provides evidence that Chinese medicine can achieve better clinical

efficacy and analgesic effects when comparing Chinese and Western medicine in the treatment of neck and low back pain. Furthermore, Chinese medicine demonstrated a favorable safety profile. However, further research is required to explore the use of Chinese medicine specifically for neck pain and to enhance the evidence base for clinical decision-making in pain management.

Key Words:

Chinese medicine, Neck and low back pain, Meta-analysis, Efficacy, VAS score, Safety.

Introduction

Discomfort in the neck, shoulders, and low back is a common clinical condition. The primary clinical signs of this syndrome include discomfort, activity restriction, and functional impairment, and they are often accompanied by symptoms of autonomic disturbance. There are many intricate elements that contribute to the sensation of pain, which can be divided into two main categories: intrinsic factors and predisposing factors. Early degenerative diseases can occur due to various external factors such as trauma, poor posture-related fatigue, wind-cold and dampness pathogens, body obesity, excessive mental stress, depression, etc. Additionally, a combination of both internal and external factors can lead to local tissue degeneration in the neck and waist, vascular exudation, and interfibrillar issues. The increase in mass causes aseptic inflammation, which in turn leads to lesions, increased pressure in tissue, and activation of nociceptors in tissue, all of which contribute to pain felt throughout the body. According to recent literature¹⁻³, conditions that result in discomfort in the neck and waist may be loosely classified into the following five categories; (1) soft tissue injury pain: lesions that can develop in the fatty

connective tissue, fascia, muscles, ligaments, joint capsules, nerves, blood vessels, periosteum, intervertebral discs, and other soft tissues that make up the neck and waist. These lesions can be caused by factors such as acute injury, chronic strain, the sensation of wind, cold, and dampness, as well as other factors. Pain in the surrounding area of blood vessels may be caused by aseptic inflammation, compression, or activation of neighboring nerves. (2) Osteoarthritis pain: pain caused by spinal osteoarthritis disease, and there are many cases of such diseases, including spinal fractures, dislocations, and vertebral facet joint injuries caused by various stresses; degenerative diseases of bone and joints that stimulate and compress adjacent tissues, nerves, and blood vessels; spinal bone destruction caused by vertebral tuberculosis and tumors; spinal structural abnormalities caused by congenital deformities; and osteoarthritis pain. (3) Discogenic neck low back pain: cervical and low back pain caused by intervertebral disc herniation or internal disc disease is called discogenic cervical and low back pain. This type of pain is typically caused by annulus fibrosus and/or an inflammatory reaction that results in intervertebral disc disorder (IDD), which in turn stimulates sinus nerves and/or forms cysts in the intervertebral discs. (4) A painful condition caused by inflammatory granulation bands is induced by disorders affecting the visceral system, such as pain in the neck caused by thyroid disease, pain in the low back caused by renal disease, pain in the low back caused by certain gynecological diseases, etc. (5) Pain that originates in the central nervous system occurs when any of the above-mentioned disorders is present. Pain symptoms, which may be caused by certain lesions in the spinal cord or the brain, sometimes need to be distinguished from chronic pain. On the other hand, a more conservative approach to therapy is seldom taken, and the outlook is often favorable, including conditions such as brain tumors, spinal cord injuries, and so forth. People, in general, misinterpreted therapy for a long time owing to the moderate early symptoms of a series of aches. This led to unintended treatment, delayed treatment, and then encouraged the advancement of nerve compression symptoms. In extreme circumstances, it could result in paralysis or even life-threatening situations.

Chinese medicine believes that the pathogenesis of low back pain is related to a deficiency of liver and kidney and blood stasis. The kidneys live in the waist, which is also where the core

of the kidneys stays hydrated⁴. This means that biological foundation is not enough, and feeding muscles and veins cannot cause low back pain. Falling and trauma to the waist will damage the qi and blood of the tendons, and the blood will not run smoothly, resulting in stagnation of qi and blood in meridians. It can cause pain in the waist due to blood retention⁵. Low back pain is mostly treated by getting rid of the sickness and strengthening the kidneys for people who have a deficiency⁶. Chinese methods are capable of promoting blood circulation, and removing blood stasis can reduce swelling and relieve pain, invigorate qi and blood, clear collaterals, and remove blood stasis⁷. Chinese medicine shows an important effect on improving microcirculation disorders, and its main pharmacological effects are: (1) improve microcirculation; (2) reduce the permeability of capillaries, and reduce exudation around microvessels; (3) change the morphology of microvessels. Kidney-tonifying medicine has the functions of strengthening tendons and bones, nourishing qi and blood, and nourishing essence and marrow⁷. This indicates that kidney-tonifying drugs are beneficial to bone formation and bone calcification. Relevant reports⁸ pointed out that Chinese methods for promoting blood circulation and removing blood stasis have immunosuppressive or regulating effects, reducing local inflammatory reactions such as local biochemical changes caused by hydrogen monoxide, interleukin, tumor necrosis factor, phospholipase A2, and prostaglandins. The treatment of lumbar intervertebral disc back pain with Chinese medicine can be reflected in many aspects, such to activate blood and chemotherapy, warm meridians, dredging collaterals, and nourishing qi and blood⁹. The active ingredients of Chinese medicines are more complex, and most of them are pleiotropic, which shows a great advantage compared with chemical drugs with single action¹⁰. In the recipe, *Rehmannia glutinosa* and Gouji are used to enter the liver and kidney meridians, which are good at nourishing blood and nourishing yin, as well as nourishing essence and marrow, strengthening tendons and bones to cure the root cause. Qi, clearing the meridian, and relieving pain are ministerial medicines; Duhuo, Weilingxian, and Yufeng are used as adjuvant medicines for dispelling wind and dampness, dispelling cold, and relieving pain; frankincense, asarum, and myrrh are used to remove blood stasis and dredging collaterals, and search the kidney meridian for wind arthralgia¹¹. The whole recipe has the effect of

invigorating the liver and kidneys, strengthening muscles and bones, nourishing qi, and blood, clearing collaterals and removing blood stasis, dispelling cold, removing dampness, and relieving pain¹². The spinal cord can promote the proliferation and differentiation of osteoblasts and promote the fusion of bone grafts. Frankincense and myrrh promote blood circulation, relieve pain after injury, and promote bone fusion¹³. It has been shown that *Achyranthes chinensis* may raise blood levels of calcium and phosphorus, that it can stimulate the proliferation of stromal cells in the bone marrow, and that it can be advantageous to the creation of bone as well as the calcification of bone. Astragalus has the ability to expand capillaries in the bone marrow cavity, improve the function of microcirculation, absorb and organize local hematoma, and accelerate the subsidence of swelling. It can also increase the activity of alkaline phosphatase in tissues, promote the synthesis of proteoglycans, and inhibit the synthesis of collagen. During the process of bone lengthening, reduce the negative responses of the nerves, blood vessels, and muscle tissue, and speed up the bone mending process¹⁴. Most Chinese believe that nourishing yin and tonifying the kidney can promote bone repair and improve bone mineral content. The products of promoting blood circulation and removing blood stasis, dispelling wind, and removing dampness have functions of anti-inflammatory, and analgesic, dilating blood vessels, and regulating immunity. The psoas pain relievers for leg and waist pain make patients' clinical condition better. This recipe maintains the best immune state of the body by regulating immune function; by improving microcirculation, it can eliminate the effect of blood microcoagulation, which is conducive to the absorption of local inflammation in diseased tissue, thereby inhibiting proliferation of connective tissue; and by being anti-inflammatory and analgesic, it effectively improves clinical symptoms.

At present, there is no systematic analysis of the effect of Chinese medicine in the treatment of pain according to the Cochrane evaluation method. Clinical practice provides evidence-based medical evidence.

Materials and Methods

Retrieving Database

The retrieval of Chinese literature databases such as CNKI, WANFANG DATA, CQVIP, CBM;

PubMed Medical Literature Retrieval Service System, Embase the Biomedical and Pharmacology Abstracts Database, The Cochrane Library and other foreign language literature databases comprehensively collect all published or registered literature on use of Chinese in treatment of pain diseases¹⁵⁻²⁹. In this work, we use the literature database that is established until October 1, 2021.

Subject Headings and Free Words for Retrieval

Different search terms were selected when searching Chinese or English databases. The Chinese search terms included “neck pain, low back pain, neck and shoulder pain, cervical spondylosis, cervical degenerative disease, cervical fasciitis, stiff neck, lumbar disc herniation” that described the name of the disease, “acute lumbar sprain, lumbar muscle strain, transverse process syndrome of the third lumbar vertebra, ankylosing spondylitis, lumbar spinal stenosis, lumbar osteoarthropathy, etc.” and “Chinese medicine, Western medicine, Chinese and Western medicine, sports acupuncture, etc.” describing interventions as well as “randomized controlled trials, random, controlled, etc.” describing type of study, use the Boolean logic operator “OR” to connect subject and free words of research object, intervention, and research method, respectively, and finally use the operator “AND” to concatenate the search results of three sets of terms.

Chinese Medicine vs. Western Medicine

Both traditional Chinese medicine and Western medicine have advantages and disadvantages. The specific conditions and personal preferences will determine the optimal therapeutic approach.

The comparison between Chinese and Western medicine has been made based on different features:

1. Philosophical feature: Chinese medicine (Yin and yang) is based on the balance of opposing forces in the body, while Western medicine believes scientific method and evidence-based research³⁰.
2. Technique used: Chinese medicine practices acupuncture, herbal medicine, and qigong therapies, while Western medicine is based on surgery, medication, and radiation therapy³¹.
3. Focus area: Chinese medicine is based on treating the whole person, not just the symptoms, but Western medicine is based on treating the symptoms of a disease³².
4. Evidence: Chinese medicine supports some evidence for using Chinese medicine

for certain conditions, while Western medicine is based on scientific evidence, and treatments proven effective³³.

5. Side effects: Chinese medicines are generally considered to be safe, but can have some side effects, while Western medicine can have serious side effects³⁴.

Yin and Yang, or the balance of opposing energies in the body, is the foundation of Chinese medicine. It is believed that these factors are what keep people healthy and stave off illness. The scientific method is the foundation of Western medicine, which bases its practices on the accumulation of empirical evidence.

Acupuncture, herbal medicine, and qigong are just a few of the methods used in Chinese medicine. Needles are inserted into certain acupuncture locations to increase qi circulation. Diseases are treated with plants and other natural substances using herbal medicine. Qigong is a fitness system that emphasizes the connection between the mind and body *via* movement and breathing.

Chinese medicine aims to heal the full person rather than just the symptoms. This means that it considers the whole person, including their mental, emotional, and spiritual well-being. Western medicine mostly addresses patient complaints by alleviating their symptoms. This suggests that the underlying causes of the disease may not be addressed.

The use of Chinese medicine for some diseases is supported by some evidence. However, more study is required to verify its efficacy. Because Western medicine is founded on empirical facts, its therapies have been shown to be efficient.

Although Chinese medicine is usually accepted to be safe, it is not without potential risks. The negative effects of Western medicine are typically more severe.

Other Resource Retrieval

Through manual retrieval of references of the above-mentioned clinical trial papers, systematic reviews, meta-analyses, conferences, and papers are further reviewed, and the collection of literature is comprehensively searched to collect relevant literature.

Research objects

The subjects included in the studies should meet the diagnostic criteria of Chinese and Western medicine and be diagnosed with neck and waist diseases with neck pain and low back pain as main symptoms.

Interventions

In the experimental group, the primary treatment involved Chinese medicine, complemented by non-surgical therapies. Chinese acupoints were chosen primarily based on their location, with concurrent treatment of the affected area. Conversely, the control group received a combination of Western medicine, physiotherapy, and other non-traditional remedies that were distinct from those employed in the experimental group.

Outcome indicators

Primary outcome measures included clinical trials to formulate efficacy evaluation standards based on Chinese and foreign authoritative medical literature to evaluate the efficacy of trial outcomes or the use of the Visual Analogue Scale (VAS) method to score patients with neck and waist pain before and after treatment.

Secondary outcome measures: safety assessment, adverse reactions, and adverse event reports.

Measurement timing was the time point after the end of the overall course of treatment prescribed by each experimenter was selected as the data extraction time point.

Study Design

The included studies were all randomized controlled trials, with randomization clearly mentioned in the research, such as the random number table method, computer software randomization method, coin tossing method, sieve tossing method, shuffling, or drawing lots, systematic randomization, etc. Semi-randomized clinical studies such as grouping according to the date of patient visit and grouping according to patient's wishes were excluded: due to the uniqueness of research questions, blinding and allocation concealment of included studies were not required.

We searched major Chinese and foreign literature data according to a pre-established search strategy, manually searched literature in the library of the Liaoning University of Traditional Chinese Medicine, and traced references to clinical trials. The results were discussed and summarized, and a total of 571 Chinese and 24 English articles were retrieved; a total of 393 studies that did not meet the standard were excluded after reading literature titles and abstracts, including repeated retrieval literature, animal experiments, non-randomized controlled trials, literature reviews and meta-analyses, personal experience summary reports, etc.; Afterwards, 202 studies,

and their full texts, were obtained, of which 4 were excluded because they were not published publicly. The literature was intensively read again, and the literature was screened strictly according to inclusion and exclusion criteria. There were 125 studies with measures, research objects, outcome indicators, and research designs that did not meet standards, 5 clinical trial registration documents, 5 with errors in literature data, 4 repeated publications, and 2 without evaluating the baseline level of research subjects. In the end, a total of 57 papers were included, all of which were in Chinese, as shown in Figure 1. The PRISMA flow diagram has been included in Figure 2.

Basic Characteristics of Included Studies

The diagnostic criteria adopted by 57 studies are as follows (Table I):

Exclusion criteria

- (1) The subjects of the study are not those with neck pain, low back pain, or pain as the main symptom.
- (2) Non-clinical trial research such as animal experiments and clinical trial registration documents.

- (3) An authority on the evaluation of diagnostic criteria and outcome indicators.
- (4) The intervention measures did not use Chinese or were not mainstay of Chinese, or both sides of control used Chinese.
- (5) Randomized controlled trials focusing on selection of different Chinese's, sequence of implementation of intervention measures, etc.
- (6) Literature with unclear descriptions of interventions.

Inclusion criteria

We examined the literature at Liaoning University of Traditional Chinese Medicine's library and cross-referenced clinical trials based on a predetermined search strategy. To be included in our analysis, studies had to meet specific criteria. These criteria encompassed the characteristics necessary for the studies to be considered. In total, we retrieved 571 Chinese publications and 24 English articles, which were subsequently discussed and summarized.

Sensitivity analysis

We recommend excluding studies with bad methodological design from the analysis, like

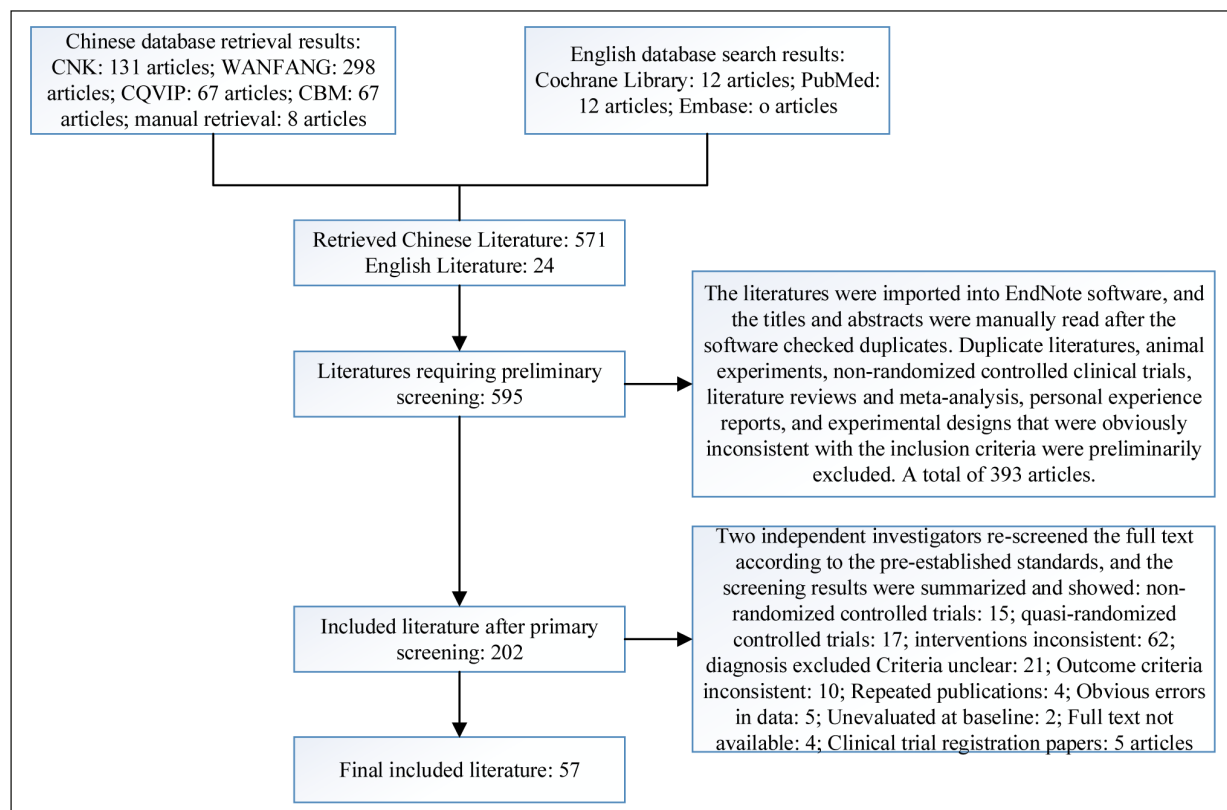


Figure 1. Literature data analysis.

Table I. Basic characteristics table.

Author/Year	Research object	Sample size (male / female)		Interventions		Outcome measures	Course of treatment	Baseline
		Test	Control	Test	Control			
China National Knowledge Infrastructure (CNKI) ²⁶	Neck and back fasciitis	45/30	45/30	Traditional Chinese Medicine	Western Medicine	Efficacy, Visual Analogue Scale (VAS)	25 times	Resemblance
WANFANG DATA ²⁷	Cervical radiculopathy	22/15	25/15	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	19 times	Resemblance
CQVIP ²⁸	Cervical spondylosis	15/16	15/16	Traditional Chinese Medicine	Western Medicine	Curative effect	6 times	Resemblance
Chinese Biomedical Database (CBM) ²⁹	Cervical spondylosis	19/24	20/25	Traditional Chinese Medicine	Western Medicine	Curative effect	8 times	Resemblance
PubMed Medical Literature Retrieval Service System ³⁰	Cervical radiculopathy	11/28	16/26	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	20 times	Resemblance
Embase The Biomedical and Pharmacology Abstracts Database ³¹	Psoas fasciitis	15/18	20/12	Traditional Chinese Medicine	Western Medicine	Curative effect	15 times	Resemblance
BMJ Best Practice ³²	Acute lumbar sprain	21/24	19/25	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	5 times	Resemblance
The Cochrane Library ³³	Lumbar disc herniation	15/16	14/17	Traditional Chinese Medicine	Western Medicine	Curative effect	11 times	Resemblance
Micromedex ³⁴	Cervical spondylosis	10/25	10/25	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	8 times	Resemblance
ClinicalKey ³⁵	Cervical spondylosis	23/10	20/9	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	6 times	Resemblance
International Pharmaceutical Abstracts (IPA) ³⁶	Acute lumbar sprain	18/14	15/15	Traditional Chinese Medicine	Western Medicine	Curative effect	9 times	Resemblance
SpringerProtocols ³⁷	Cervical spondylosis	11/25	10/22	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	11 times	Resemblance
Chinese Medical Current Contents (CMCC) ³⁸	Cervical spondylosis	20/12	15/15	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	10 times	Resemblance
SinoMed ³⁹	Lumbar disc herniation	15/20	12/21	Traditional Chinese Medicine	Western Medicine	Curative effect	2 times	Resemblance
National Union Catalog of Foreign Biomedical Journal ⁴⁰	Cervical spondylosis	16/23	20/21	Traditional Chinese Medicine (Embedded Needle)	Western Medicine	Efficacy, VAS	5 times	Resemblance
Chinese clinical trial registry ⁴¹	Acute lumbar sprain	25/20	30/16	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	2-4 times	Resemblance
EBSCO ⁴²	Acute lumbar sprain	25/13	20/11	Traditional Chinese Medicine	Western Medicine	Curative effect	6 times	Resemblance

Table continued

Table 1 (continued). Basic characteristics table.

Author/Year	Research object	Sample size (male / female)		Interventions		Outcome measures	Course of treatment	Baseline
		Test	Control	Test	Control			
BiosisPro ⁴³	Acute lumbar sprain	17/15	19/13	Traditional Chinese Medicine	Western Medicine	Efficacy, VAS	2 times	Resemblance
Chinese Medical Citation Index (CMCI) ⁴⁴	Acute lumbar sprain	19/12	18/10	Traditional Chinese Medicine	Western Medicine (loxoprofen sodium)	Efficacy, VAS	7 times	Resemblance
CALIS ⁴⁵	Acute lumbar sprain	11/15	10/10	Traditional Chinese Medicine	Western Medicine (meloxicam)	Efficacy, VAS	8 times	Resemblance
VIP Chinese Science Journals Database ⁴⁶	Acute lumbar sprain	18/14	20/10	Traditional Chinese Medicine	Western Medicine (clofenac sodium sustained-release tablets, pain relief paste)	Efficacy, VAS	6 times	Resemblance
Chinese Biomedical Database (CBM) ²⁹	Acute lumbar sprain	25/17	23/15	Traditional Chinese Medicine	Western Medicine (Diclofenac Sodium Sustained-Release Capsules)	Curative effect	11 times	Resemblance
PubMed Medical Literature Retrieval Service System ³⁰	Acute lumbar sprain	44/10	45/6	Traditional Chinese Medicine	Western Medicine	Curative effect	10 times	Resemblance
Embase The Biomedical and Pharmacology Abstracts Database ³¹	Lumbar muscle strain	20/10	19/9	Traditional Chinese Medicine + Western Medicine	Western Medicine	Efficacy, VAS	13 times	Resemblance
BMJ Best Practice ³²	Lumbar disc herniation	17/15	15/16	Traditional Chinese Medicine + Western Medicine	Western Medicine	Curative effect	9 times	Resemblance
The Cochrane Library ³³	Chronic psoas muscle strain	15/15	13/14	Traditional Chinese Medicine + Western Medicine	Western Medicine	Efficacy, VAS	13 times	Resemblance
Micromedex ³⁴	Acute lumbar sprain	33/24	30/25	Traditional Chinese Medicine + Western Medicine	Western Medicine	Efficacy, VAS	6 times	Resemblance
ClinicalKey ³⁵	Lumbar muscle strain	25/20	21/20	Traditional Chinese Medicine + Western Medicine	Western Medicine	Curative effect	16 times	Resemblance

those with unclear randomization plans, or unfair allocation methods. This finding can be checked using a complementary method, a statistical model, changing the effect size, and other methods.

Statistical Analysis

Table II displays the findings of qualitative and quantitative analysis performed on three separate sets of experimental data. The purpose

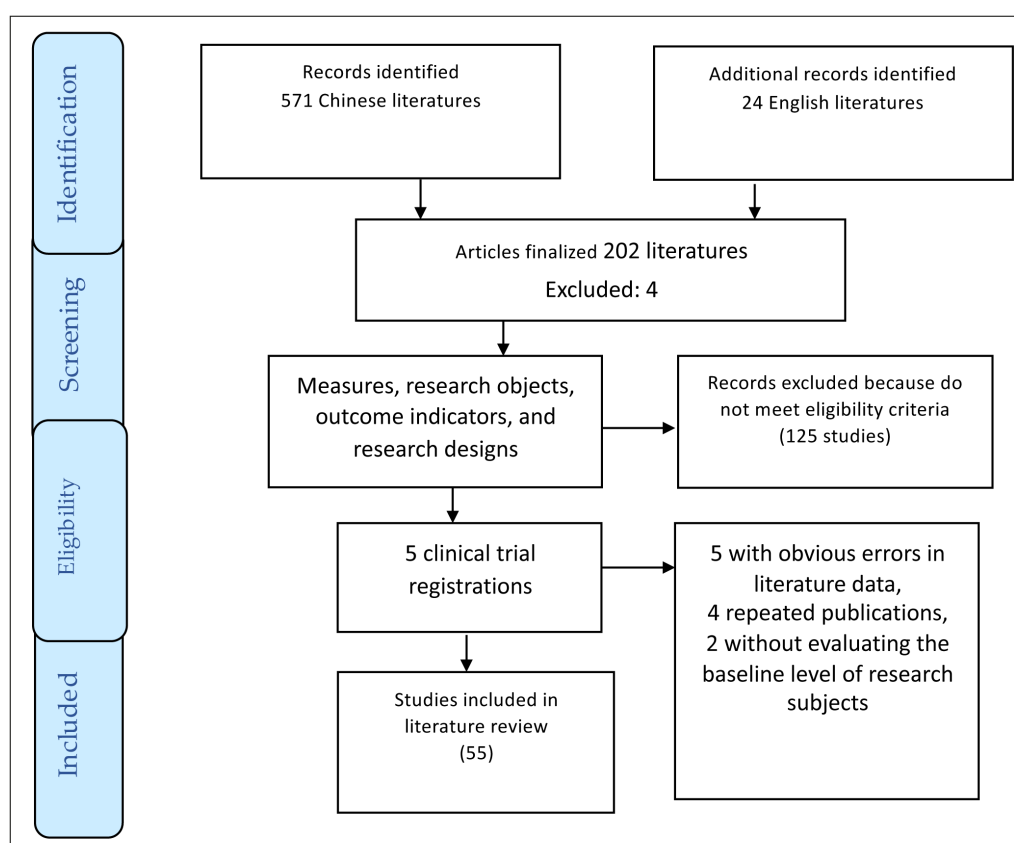


Figure 2. PRISMA Flow Diagram.

of these studies was to determine whether the data had a wide variety of characteristics. According to the findings of the study, $\chi^2=2.67$, $p=1.00>0.10$, and $I^2=0\%$ indicate that the studies assessed had a significant degree of resemblance with one another. The point estimate and confidence interval (CI) of the effect size of aggregated data were both 3.95, as shown by the findings of the meta-analysis that was based on a fixed-effect model.

Following the completion of an investigation into the heterogeneity of the sixteen studies, the

following results were found and then reported in Table III: $\chi^2=2.35$, $p=1.00>0.10$, and $I^2=0\%$. Despite these findings, the heterogeneity was disregarded, and for the meta-analysis, a model with a fixed effect was chosen instead. According to the statistical analysis that was performed on the gathered data, the overall impact size point estimate was found to be 2.35. The number 4.13 may be found in the column designated for invalid entries, and it can be found to the right of the line that has been determined to be invalid. The significance threshold is less than 0.00000001,

Table II. Diagnostic criteria table.

Diagnostic criteria	Included studies (number)	Overall proportion
“Traditional Chinese Medicine Diagnosis and Efficacy Criteria”	31: 9,16-20,22-24,26,27,29-33,36,37,39-41,43-46,50,52-54,56,57	54.38%
“Traditional Chinese Medicine Diseases and Syndromes Diagnosis and Efficacy Standards” combined with other standards	13: 4,5,8,11,12,14,21,28,34,35,38,49,55	22.81%
Summary of Second Symposium on Cervical Spondylosis	4: 2,3,42,47	7.02%
“Clinical diagnosis and treatment guidelines”	6: 5,7,10,13,25,48	10.53%
Other authoritative standards	3: 1,5,51	5.26%
Overall sample size	57	100%

Table III. Comparing sports needling and traditional acupuncture-based treatment (I).

Study or Subgroup	Sports needling		Traditional acupuncture		Weight	Odds Ratio
	Events	Total	Events	Total		Mantel-Haenszel test (M-H) Fixed, 95% Confidence Interval (CI)
China National Knowledge Infrastructure (CNKI) ²⁶	45	44	35	45	9.4%	4.66 [0.95, 23.25]
Wanfang Data ²⁷	30	30	25	30	12.7%	2.75 [1.65, 11.81]
CQVIP ²⁸	33	33	33	35	2.8%	5.47 [0.23, 118.07]
Chinese Biomedical Database (CBM) ²⁹	30	30	25	30	4.7%	3.33 [0.35, 34.17]
PubMed Medical Literature Retrieval Service System ³⁰	30	30	30	28	5.5%	2.05 [0.19, 24.14]
Embase The Biomedical and Pharmacology Abstracts Database ³¹	34	35	30	30	4.5%	2.43 [0.22, 27.99]
BMJ Best Practice ³²	45	46	35	40	4.5%	6.93 [0.79, 61.86]
The Cochrane Library ³³	35	33	31	33	5.2%	2.05 [0.18, 23.85]
Micromedex ³⁴	36	40	32	38	9.3%	4.05 [0.77, 20.77]
ClinicalKey ³⁵	45	43	40	45	5.1%	3.23 [0.33, 32.22]
International Pharmaceutical Abstracts (IPA) ³⁶	36	40	30	39	8.6%	6.35 [1.31, 31.13]
SpringerProtocols ³⁷	26	30	25	30	8.7%	3.52 [0.66, 18.99]
Chinese Medical Current Contents (CMCC) ³⁸	30	30	25	30	2.5%	10.35 [0.55, 201.43]

and the Z value is 5.60; this shows that there is a statistical difference between the outcomes. In addition to that, the level of significance is lower than 0.00000001. The fact that the results of the sensitivity analysis are consistent with those of the overall meta-analysis adds confidence to the hypothesis that the findings of the main meta-analysis can be trustworthy. Since the findings of the sensitivity analysis are congruent with those of the overall meta-analysis, this lends credence to the hypothesis. The treatment of pain *via* the use of Western medicine is often more successful than the use of alternative ways.

The Chi-square test-based results are shown in Tables IV and V to determine the heterogeneity of the literature that was considered. The results of these tests are as follows: $\chi^2=1.20$, $p=0.88>0.10$, and $I^2=0\%$, indicating that the homogeneity of the literature that was included was excellent. A model with fixed effects was used to compile these statistical results. The overall effect size (OR) for the treatment of monthly back pain was 4.77, and its 95% confidence interval was also 4.77, as determined by the outcomes of a combined trial. This suggests that the use of traditional Chinese medicine as a treatment for back pain is more successful than the use of Western medication in combination with other types of therapy.

The findings of this work using the criterion heterogeneity $\chi^2=3.60$, $p=0.16>0.10$, and $I^2=45\%$ revealed that there was a significant level of heterogeneity in the data. This was due to the fact that there were not enough articles included to carry out a subgroup analysis, which ultimately resulted in the current predicament that we find ourselves in.

Results

This work reported comparisons¹⁵⁻³⁵ between Chinese and Western medicine, and outcome indicators in terms of clinical efficacy. Only data that meets the controlled studies' trial design requirements are taken out for our analysis. The detailed results are as follows (Figure 3 and Table III).

The above experimental data were qualitatively and quantitatively tested for heterogeneity, and results showed that $\chi^2=2.67$, $p=1.00>0.10$, $I^2=0\%$, indicating that the included studies were of good homogeneity. The OR was used to describe effect size. The meta-analysis results of the fixed effect model showed that the point estimate and 95% CI of the effect size of aggregated results were 3.95. The dose was located on the right side of the ineffective line (OR=1), suggesting that Chinese medicine is more effective than Western medicine in

Table IV. Comparing sports needling and traditional acupuncture-based treatment (II).

Study or Subgroup	Sports needling		Traditional acupuncture		Weight	Odds Ratio
	Events	Total	Events	Total		Mantel-Haenszel test (M-H) Fixed, 95% Confidence Interval (CI)
China National Knowledge Infrastructure (CNKI) ²⁶	30	30	28	30	3.7%	3.23 [0.33, 32.88]
Wanfang Data ²⁷	44	46	36	44	7.3%	4.66 [0.95, 23.25]
CQVIP ²⁸	25	30	26	31	10.0%	2.75 [0.65, 11.82]
Chinese Biomedical Database (CBM) ²⁹	36	34	24	35	2.0%	5.45 [0.26, 118.06]
PubMed Medical Literature Retrieval Service System ³⁰	70	75	33	75	14.6%	3.74 [1.13, 12.03]
Embase The Biomedical and Pharmacology Abstracts Database ³¹	30	31	63	30	3.6%	3.36 [0.35, 34.20]
BMJ Best Practice ³²	30	30	25	30	4.4%	2.05 [0.19, 24.14]
The Cochrane Library ³³	35	35	29	30	3.5%	2.43 [0.22, 27.99]
Micromedex ³⁴	48	50	30	40	3.4%	6.93 [0.79, 61.86]
ClinicalKey ³⁵	35	36	35	33	4.2%	2.05 [0.16, 23.85]
International Pharmaceutical Abstracts (IPA) ³⁶	38	41	31	42	7.1%	4.05 [0.77, 20.77]
SpringerProtocols ³⁷	45	46	33	45	4.0%	3.23 [0.33, 32.22]
Chinese Medical Current Contents (CMCC) ³⁸	26	30	40	30	4.1%	2.02 [0.18, 23.35]
SinoMed ³⁹	39	40	30	41	6.7%	6.35 [1.31, 31.12]
National Union Catalog of Foreign Biomedical Journal ⁴⁰	29	30	25	32	6.7%	3.52 [0.66, 18.99]
Chinese clinical trial registry ⁴¹	30	31	28	33	1.6%	10.35 [0.55, 201.44]
EBSCO ⁴²	33	35	30	35	4.3%	3.18 [0.33, 32.34]
BiosisPro ⁴³	44	45	40	45	2.3%	7.54 [0.36, 149.75]
Chinese Medical Citation Index (CMCI) ⁴⁴	39	40	33	40	6.6%	4.76 [0.95, 23.99]
Total (95% CI)		735		721	100.00%	3.96 [2.55, 6.15]
Total events	706		619			

Table V. Comparing sports needling and traditional acupuncture-based treatment (III).

Study or Subgroup	Sports needling		Traditional acupuncture		Weight	Odds Ratio
	Events	Total	Events	Total		Mantel-Haenszel test (M-H) Fixed, 95% Confidence Interval (CI)
China National Knowledge Infrastructure (CNKI) ²⁶	17	20	16	20	14.3%	3.00 [0.50, 17.75]
Wanfang Data ²⁷	32	45	28	35	14.6%	4.95 [0.93, 25.25]
CQVIP ²⁸	42	45	39	45	15.1%	4.66 [0.95, 23.25]
Chinese Biomedical Database (CBM) ²⁹	110	120	97	120	52.5%	4.26 [1.77, 10.25]
The Cochrane Library ³³	35	35	27	34	3.5%	18.95 [1.05, 347.31]
Total (95% CI)		265		254	100.0%	4.79 [2.53, 8.95]
Total events	236		207			

treating pain diseases. In the forest plot, 95% of CIs effect sizes do not intersect with the null line, and they are both located on the right side of the null line (OR>1). It further illustrates the advantages of Chinese compared with Western medicine in the treatment of pain diseases.

Sensitivity analysis was performed on conclusions from the referred articles that clearly described the randomization scheme from 19 included trials. The results are as follows (Figure 4 and Table IV).

The 16 studies were tested for heterogeneity: $\chi^2=2.35$, $p=1.00>0.10$, $I^2=0\%$, heterogeneity was

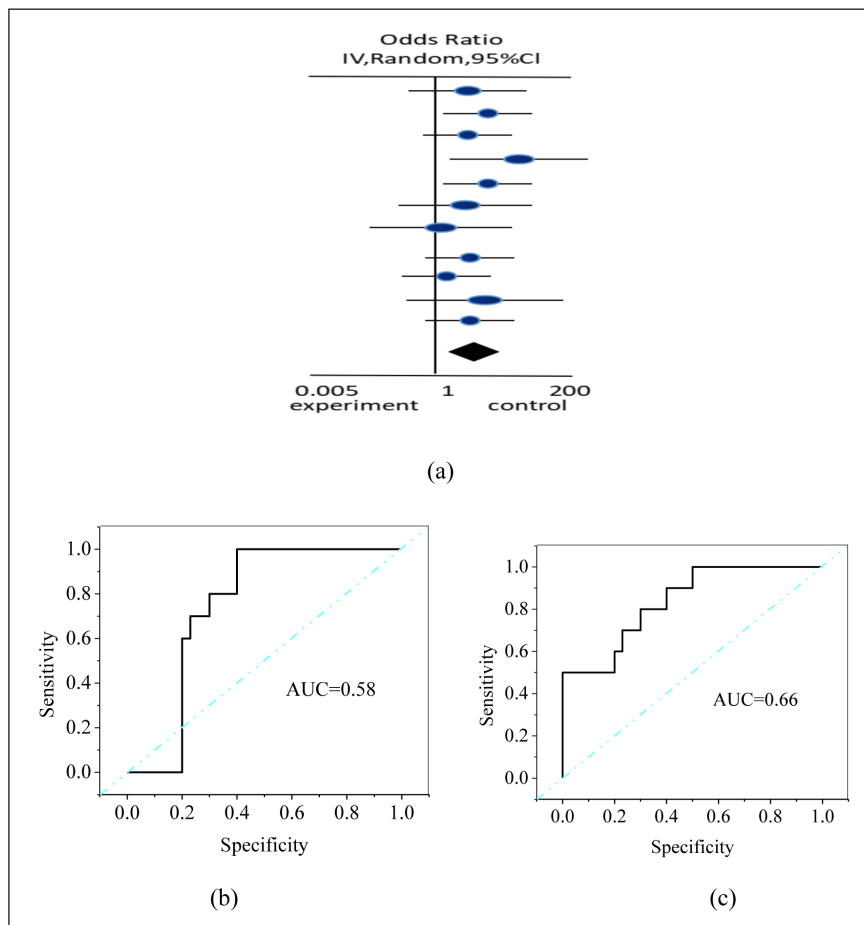


Figure 3. Comparing the efficacy of Chinese and Western medicine-I: (a), 95% CI plot; (b), Accuracy plot for sports needling; (c), Accuracy plot for traditional acupuncture.

ignored, fixed effect model was used for meta-analysis, and statistical summary results showed that total effect size point estimate. The value is 4.13, which is located on the right side of the invalid line, $Z=5.60$ ($p<0.00001$). The results are statistically different, and sensitivity analysis results are consistent with overall meta-analysis results, indicating that original meta-analysis results are stable and reliable.

There are studies³⁵ on the efficacy of Chinese combined with Western medicine in the treatment of pain. A total of 509 patients were included, and 5 patients dropped out without reporting cause. A total of 504 patients were counted on effective rate. The current analysis is as follows (Figure 5 and Table V).

The Chi-square test and I^2 -test were used to calculate the heterogeneity of included literature: $\chi^2=1.20$, $p=0.88>0.10$, $I^2=0\%$, homogeneity of included literature showed better results, and the fixed-effects model was used to calculate statistics. Combined analysis showed that overall effect size (OR) and its 95% CI was 4.77, suggesting that Chinese is more effective than Western medicine combined with other therapies in the

treatment of lower back pain are more prominent.

The analysis is shown in Figure 6 and Table VI. The literature included were tested for heterogeneity $\chi^2=3.60$, $p=0.16>0.10$, $I^2=45\%$, there was moderate heterogeneity, because only a few studies were included, and subgroup analysis could not be performed.

Discussions

In this paper, we use Chinese medicine for pain relief where pain belongs to the category of “neck and low back pain”. Common chronic pain is characterized by deficiency of the kidney and essence and stagnation of qi and blood. Long-term fatigue, lack of rest, and the combination of work and rest will cause the body to be unbalanced, meridians will be blocked, and it will deviate from the way of health preservation³⁶. There are various explanations and factors in Chinese medicine for the causes of low back pain. The literature analysis of pain recorded in Chinese shows that

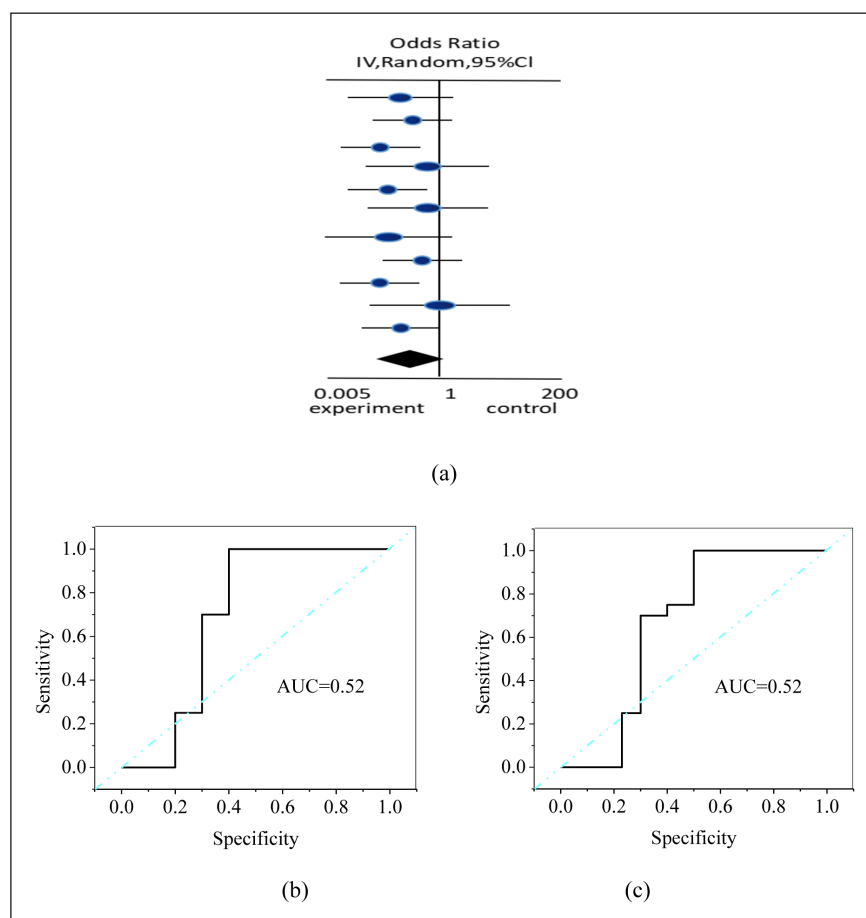


Figure 4. Comparing the efficacy of Chinese and Western medicine-II: (a), 95% CI plot; (b), Accuracy plot for sports needling; (c), Accuracy plot for traditional acupuncture..

the pathogenic mechanism of common adult pain is mainly reflected in the root cause of kidney deficiency and qi deficiency, qi and blood loss, and muscle and ligament injury and trauma caused by improper physical activity or fatigue. Infection is a characteristic cause, and due to the above reasons, a “barrier” of qi, blood, and meridians remains in the waist of the human body, resulting

in pain³⁷. The source of nutrition for the intervertebral disc mainly depends on the concentration gradient between the surrounding tissue and the intervertebral disc. The degenerative disease of the intervertebral disc will cause poor circulation of peripheral capillaries, resulting in low back pain, which in turn affects the lower limbs of the human body³⁸. Chinese medicine focuses on the patho-

Table VI. Comparing Sports needling and traditional acupuncture-based treatment (IV).

Study or Subgroup	Sports needling		Traditional acupuncture		Weight	Odds Ratio
	Events	Total	Events	Total		Mantel-Haenszel test (M-H) Fixed, 95% Confidence Interval (CI)
China National Knowledge Infrastructure (CNKI) ²⁶	35	35	33	34	25.5%	3.29 [0.15, 83.33]
Wanfang Data ²⁷	25	25	20	20	25.03%	3.60 [0.15, 92.81]
Chinese Biomedical Database (CBM) ²⁹	25	33	30	34	49.02%	0.24 [0.05, 1.15]
Total (95% CI)		93		88	100.0%	0.90 [1.14, 6.85]
Total events	85		83			

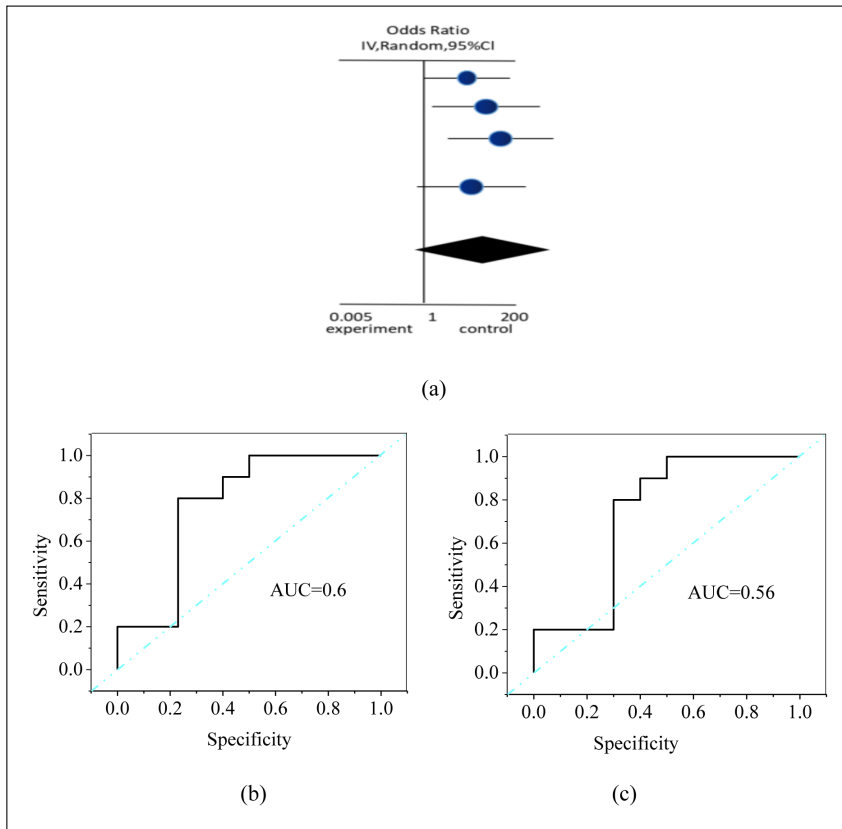


Figure 5. Comparing the efficacy of Chinese and Western medicine -III: (a), 95% CI plot; (b), Accuracy plot for sports needling; (c), Accuracy plot for traditional acupuncture.

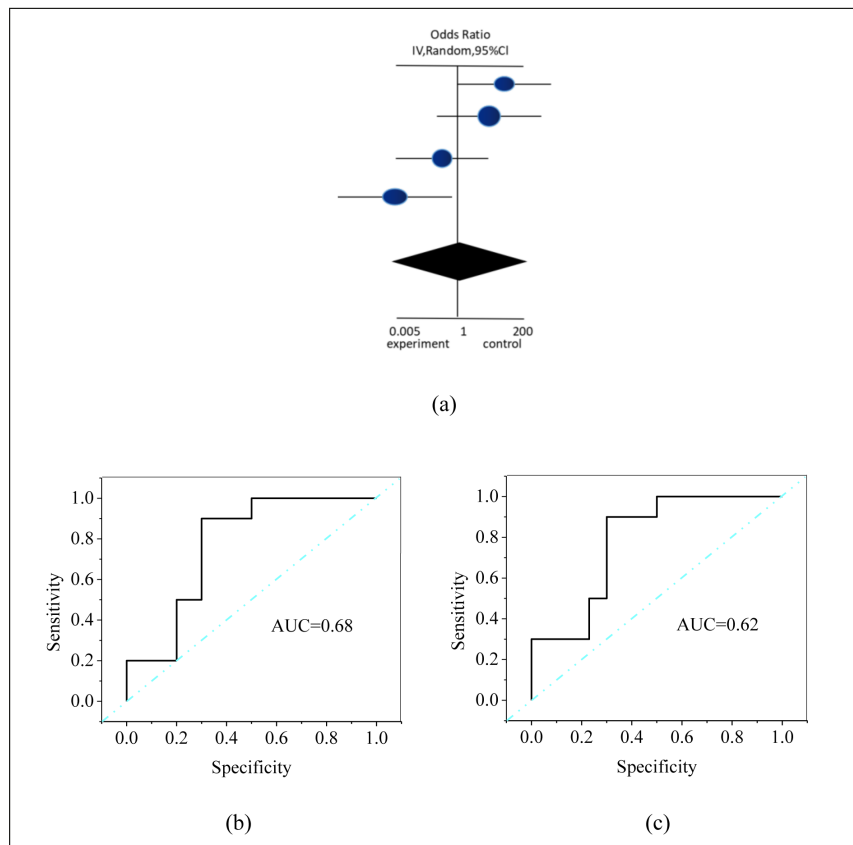


Figure 6. Comparing efficacy of Chinese and Western medicine -IV: (a), 95% CI plot; (b), Accuracy plot for sports needling; (c), Accuracy plot for traditional acupuncture.

genesis of “qi stagnation and blood fatigue, and meridian blockage” in low back pain. Therefore, Chinese medicine advocates treatment principles of activating tendons and collaterals, promoting blood circulation and qi, promoting the blood circulation of capillaries around the waist, relieving soft tissue inflammation, preventing tissue adhesion and nutritional imbalance, and promoting the cure of pain. As a unique treatment method in China, Chinese medicine has been passed down from primitive society to the present. After nearly a thousand years of historical verification, the clinical efficacy of Chinese medicine has been established. It has been fully verified, and as a natural drug, it has characteristics of small side effects and high safety performance³⁹. It has evolved from the most primitive stone-throwing bloodletting, twig fixation, and leaves and thorns wrapping wounds to today’s Chinese treatments such as bone setting, acupuncture, and hot compresses⁴⁰. Since the development of Chinese treatment, it has gradually transitioned from treatment to prevention and expanded to many fields, from local treatment to systemic treatment⁴¹. With the continuous exploration and progress of pharmaceutical advancements in the medical world, the treatment of diseases is no longer limited to a single treatment method, and people have begun to try to use a combination of multiple treatment directions, and great progress has been made⁴². Research on the use of Chinese medicine has evolved beyond traditional and conservative approaches, now incorporating elements of modern medicine. Some modern instruments and equipment have begun to be used in Chinese treatment, such as iontophoresis, microwaves, electromagnetic waves, lasers, etc. Chinese medicine therapy is used in the treatment of pain⁴³. It has strong reliability and safety. At the same time, with the development of technology, the clinical effect of treatment will be gradually strengthened.

Traditional Chinese medicine fumigation therapy is relatively widely used in clinical practice. At the same time, side effects are very small, and safety performance is high. It is suitable for all kinds of people. It is suitable for all ages, as well as women and children, and can be treated both internally and externally⁴⁴⁻⁴⁹. The overall impact of Chinese medicine fumigation is outstanding; it has a high level of safety, does not cause any pain or discomfort, can be carried out with ease, and has a number of other beneficial qualities. During treatment, there is a high degree of collaboration, a high degree of comfort, and a favorable psychological state, which clearly shows the efficacy of

Chinese fumigation in the treatment of pain in senior patients. The majority of aches and pains last for a long time. According to Chinese philosophy, continuous trauma causes the liver and kidneys to develop disorders like qi and blood deficiency, undernourished muscles and bones, and an unhealthy state of blood. In the treatment intervention, experimentally composed prescriptions according to Chinese dialectics of pain were combined with commonly used drugs for clinical trauma treatment: Tougucao, Shenjincao, Meihuo, Duhuo, Weilingxian, Achyranthes, Muxiang, Fried Eucommia, Cinnamon, Shijupu, red peony, nocturnal vine, dog ridge, Digupi, Wujiapi, safflower, red peony, Chuanxiong, Chuandongzi. Among them, drugs such as Eucommia, Achyranthes, and Dog Chi are used to nourish the liver and kidneys and strengthen muscles and bones. Chixueteng, Yejiateng, Chishao, etc., nourish blood and dredge collaterals; Qianghuo, Duhuo, Weilingxian, cinnamon, and others expel wind and dehumidify, warm, and dredge meridians. Use Muxiang, Chuandongzi, Chuanxiong, and safflower to relieve pain, activate blood, and remove blood stasis. In Chinese medicine, tougucao is known for its ability to improve blood circulation, reduce inflammation, and eliminate rheumatism. It then travels *via* the blood vessels to the liver meridian, where it activates the blood and stops the pain as the blood vessels pass through. Tendon grass, also known as Lion grass, Shujin grass, bitter grass, and heated grass, is a kind of grass that is said to have the ability to relax tendons while simultaneously stimulating collaterals. It has been shown to be effective in the treatment of bruises, as well as in preventing and lowering swelling and in protecting against wind, cold, and humidity. According to the findings of scientific trials, herbal medicines like Tougucao and Shenjincao may be added to fumigation and washing recipes to increase permeability. This makes it easier for the body to absorb pharmaceuticals. All of the medicines are combined in order to dissipate wind and cold, relax tendons and collaterals, stimulate blood and dredge meridians, stimulate kidneys and strengthen bones, and stimulate blood and dredge meridians.

Conclusions

According to the findings of this research, Chinese medicine has the potential to deliver superior clinical effectiveness and analgesic benefits in the treatment of neck and low back pain

when compared to western medicine. In addition to this, there was evidence to show that traditional Chinese medicine had a good safety profile. However, further study is necessary in order to assess the use of Chinese medicine, in particular for the treatment of neck pain, and to strengthen the evidence foundation for clinical decision-making in the field of pain management. According to the findings of the study, traditional Chinese medicine may be an effective treatment for neck and low back pain. Traditional Chinese pain treatments include acupuncture, acupressure, and cupping. These therapies' success and safety may depend on the kind of therapy, its length, the patient's features, and the practitioner's skill. More study is needed to understand traditional Chinese medicine therapies for neck and low back pain and their long-term efficacy and safety.

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Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declared that they have no conflicts of interest regarding this work.

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Ethics Approval

Not applicable.

Informed Consent

Not applicable.

Authors' Contributions

Conceptualization, X.D. and Sh.W.; methodology, X.D. and Sh.W.; software, X.D. and Sh.W.; validation, X.D. and Sh.W.; formal analysis, X.D. and Sh.W.; investigation, X.D. and Sh.W.; resources, X.D. and Sh.W.; data curation, X.D. and Sh.W.; writing-original draft preparation, X.D. and Sh.W.;

writing-review and editing, X.D. and Sh.W.; visualization, X.D. and Sh.W.; supervision, X.D. and Sh.W.; All authors have read and agreed to the published version of the manuscript.

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