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INPLASY

Effectiveness of Acupuncture and Moxibustion Combined with Rehabilitation Training for Post-stroke Shoulder-hand Syndrome: A Systematic Review and Meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 May 2025 and was last updated on 28 May 2025.

INTRODUCTION

Review question / Objective This systematic review and meta-analysis aims to address this knowledge gap by comprehensively evaluating the effectiveness of combining acupuncture-moxibustion with rehabilitation training compared to rehabilitation training alone for post-stroke SHS. By synthesizing the available evidence, this study seeks to provide clinicians and researchers with valuable insights into the potential benefits and limitations of this integrated approach, ultimately contributing to more effective treatment strategies for post-stroke SHS patients.

Condition being studied Post-stroke shoulder-hand syndrome (SHS), also known as complex regional pain syndrome type 1 (CRPS-1), represents a significant challenge in stroke rehabilitation.Traditional rehabilitation approaches have long been considered the cornerstone of SHS management.In recent years, there has been growing interest in integrative approaches that combine traditional Chinese medicine (TCM) with modern rehabilitation techniques, there remains a critical need for systematic evaluation of its effectiveness.

METHODS

Participant or population Studies were considered eligible if they were randomized controlled trials involving adult patients diagnosed with post-stroke shoulder-hand syndrome, regardless of stroke stage.

Intervention The intervention of interest was acupuncture and/or moxibustion combined with rehabilitation training.

Comparator With rehabilitation training alone as the control intervention.

Study designs to be included The study selection process followed a systematic approach with two independent reviewers screening titles and abstracts according to the predefined criteria. Data extraction was conducted independently by two reviewers using a standardized form designed to capture comprehensive study information. The study selection process followed a systematic approach with two independent reviewers screening titles and abstracts according to the predefined criteria.

Eligibility criteria The inclusion criteria were carefully defined to ensure the selection of appropriate studies. Studies were considered eligible if they were randomized controlled trials involving adult patients diagnosed with post-stroke shoulder-hand syndrome, regardless of stroke stage. The intervention of interest was acupuncture and/or moxibustion combined with rehabilitation training, compared with rehabilitation training alone as the control intervention. Eligible studies needed to report at least one of the following outcome measures: Fugl-Meyer Assessment (FMA) scale for upper extremity function, Visual Analogue Scale (VAS) for pain assessment, Barthel Index (BI) or Modified Barthel Index (MBI) for activities of daily living, swelling scores, or total response rate.
Studies were excluded from the analysis if they did not meet the randomized controlled trial design criterion, included interventions combining other treatments beyond acupuncture/moxibustion and rehabilitation, contained duplicate publications or incomplete data, or were case reports, reviews, or animal studies.

Information sources PubMed, Embase, Cochrane Library, Web of Science, Sinomed, China National Knowledge Infrastructure (CNKI), and Wanfang Database.

Main outcome(s) VAS scores across: the pooled standardized mean difference was 1.62 (95% CI: 1.19-2.06); he Fugl-Meyer Assessment (FMA) scale results: SMD of 1.78 (95% CI: 1.41-2.15); The analysis of Barthel Index (BI) and Modified Barthel Index (MBI) scores: the pooled SMD was 1.01 (95% CI: 0.48-1.54);Swelling Reduction: a large effect size with SMD = -1.75 (95% CI: -2.08, -1.42); Total Response Rate: the combination therapy demonstrated superior outcomes compared to rehabilitation alone (RR = 1.21, 95% CI: 1.01-1.44).

Quality assessment / Risk of bias analysis The majority of included studies demonstrated low to moderate risk of bias across key domains. Random sequence generation and outcome assessment were generally well-reported, showing low risk of bias. However, allocation concealment and blinding procedures were less clearly described in many studies, resulting in unclear risk assessments. Incomplete outcome data and selective reporting showed predominantly low risk of bias, indicating good quality in data handling and reporting.

Strategy of data synthesis Statistical analyses were performed using Review Manager 5.4 software. For continuous outcomes including FMA, VAS, and BI/MBI scores, standardized mean differences (SMD) with 95% confidence intervals (CI) were calculated to assess treatment effects. Dichotomous outcomes, such as total response rate, were analyzed using risk ratios (RR) with 95% CI. Given the expected clinical heterogeneity among studies, random-effects models were employed for all analyses.
The assessment of heterogeneity was conducted using both the I^2 statistic and chi-square test. The interpretation of I^2 values followed conventional thresholds, with 25%, 50%, and 75% indicating low, moderate, and high heterogeneity, respectively. Statistical significance was set at $P < 0.05$. Publication bias was evaluated through funnel plot analysis when a sufficient number of studies was available for meaningful assessment.

Subgroup analysis Subgroup analyses were planned to explore potential sources of heterogeneity based on several key factors. These included stroke stage (I, II, or III), type of acupuncture/moxibustion technique employed, duration of treatment, and study quality. These analyses aimed to identify potential moderating factors that might influence treatment effectiveness and provide insights for clinical practice.

Sensitivity analysis N/A.

Country(ies) involved China.

Keywords Acupuncture; Moxibustion; Rehabilitation; Stroke; Shoulder-hand Syndrome; Meta-analysis.

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