INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Acupuncture and related therapies for upper limb dysfunction after stroke: A protocol for systematic review and network meta-analysis

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Review question / Objective: **This systematic review protocol aims to analyze different acupuncture and related therapies to treat upper limb dysfunction after stroke, with a view to providing an evidence-based basis for clinical implementation of treatment for upper limb dysfunction after stroke.**
Condition being studied: **Upper limb dysfunction is a common clinical complication after stroke, which seriously affects the quality of life of patients. Rehabilitation of upper limb dysfunction after stroke is crucial, in which complementary and alternative medicine plays an important role. Acupuncture is widely used in China to treat upper limb dysfunction after stroke in recent years, which has curative effect recognized by clinical experts. However, the effectiveness and safety of acupuncture-related therapies applied to upper limb dysfunction after stroke is still unclear.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2023 and was last updated on 23 March 2023 (registration number INPLASY202330086).

INTRODUCTION

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METHODS

Participant or population: The patients were diagnosed of upper limb dysfunction after stroke (fulfilling any recognized diagnostic criteria of stroke with upper limb dysfunction), with no restriction of age and gender.

Intervention: Acupuncture and related therapies including but not limited to acupuncture, electric acupunc ture, warm needling, moxibustion, acupoint injection, acupointapplication, acupoint catgut embedding, auricular acupuncture, regardless of time of treatment and amount of stimulation.

Comparator: Control intervention will belimited to sham acupuncture or placebo, routine care, conven tional drugs. When studies combine acupuncture therapies withother active therapy, both the experimental and the controlgroups are required to use the same active therapy.

Study designs to be included: Randomized controlled trials (RCTs) will be included to assess the effects of acupuncture for upper limb dysfunction after stroke regardless of language. Duplicate and no sufficient information studies will be excluded.

Eligibility criteria: Additional exclusion criteria:1. Research on self-controlled or other non-RCTs;2. research with unclear diagnostic criteria;3. pre-clinical studies, case reports, systematic reviews and meta-analysis;4. the report did not have clear original data, and contacting the author was unsuccessful;5. there was no acupuncture-related therapy or other forms of acupuncture (such as transcutaneous electrical nerve stimulation or transcranial magnetic stimulation);6. repeated research or research report results are the same.

Information sources: We will search the following electronic databases without restrictions for language or publication status: PubMed, EMBASE, The Cochrane Library,Chinese National Knowledge Infrastructure (CNKI), Wanfang database, Chinese Science and Technology Periodical Database(VIP) and China Biology Medicine Database (CBM) from the establishment of the database until March 23,2023.A mixture of medical subject headings (MeSH) terms and free words were used to perform the search. Furthermore, to obtain more comprehensive resource, the references used in the medical literature have been supplemented retrospectively.

Main outcome(s): The primary outcome measure will be the Fugl-Meyer Assessment (FMA) score.

Additional outcome(s): Secondary outcomes will include the Wolf Motor Function Test (WMFT), Modified Ashworth Scale(MAS), arm movement survey test table(ARAT), and upper extremity freehand muscle strength assessment scores(MMT).

Quality assessment / Risk of bias analysis: Two reviewers (YYX and WQY) will evaluate the risk of bias of all filtered trails using the Cochrane Handbook's Risk of Bias Tool for RCTs, and the third reviewer will settle disputes. For each trail, each contents below: (i) randomization process, (ii) allocation concealment, (iii) blinding of participants and personnel, (iv) blinding of outcome assessment, (v) missing outcome data, (vi) selective reporting, and (vii) other bias, will be evaluated respectively. The trial will be rated high,unclear, or low risk of bias according to each domain.We will manage to reach a consensus between 2 reviewers on condition that there is any disagreement when assessing the risk of bias of the studies. If necessary, a third rater (HW) will resolve the disagreement.

Strategy of data synthesis: 1.Pairwise meta-analysis

RevMan V.5.4 will be used to perform the pairwise meta analysis. We estimated the summary effect size by using OR for dichotomous variables, the mean difference (MD) for continuous variables. The 95% confidence intervals (CI) will be used to indicate whether the effect index is statistically significant.

2.Network meta-analysis

We will perform network meta-analyses using a Bayesian framework via the "gemtc" package and "rjags" package of the R software version 4.2.2. The specific parameter details are as follows: the initial value will be set to 2.5; four chains will be built by Markov Chain Monte Carlo (MCMC) method for the simulation that is iterated 100, 000 times, of which the first 50, 000 are annealing to remove the effect of the initial value. The potential scale reduced factor (PSRF) will be used to represent the convergence of the included studies, if it is close to or equal to 1, it means that the model is stable, and the next step of data analysis can be carried out. When there is a closed loop, the consistency between direct and indirect evidence is judged by the node-splitting method, with $P \leq 0.05$ indicating there is obvious consistency. Finally, we will draw a ranking probability map to comprehensively evaluate the efficacy and safety of each intervention.

Subgroup analysis: When considerable heterogeneity is detected in a previous analysis, a subgroup analysis will be performed if necessary. Subgroup analyses of the following factors will be conducted to assess heterogeneity as well as possible: age, duration of disease, type of acupuncture, the treatment of the control group.

Sensitivity analysis: The essence of NMA is to make indirect comparisons. To obtain a stable conclusion, a sensitivity analysis will be conducted to address whether the primary decision made in the review pro cess is dominated by 1 or several studies. Several factors, such as a high risk of bias, specific population, sample size, method ological weaknesses, specific effect modifiers, and other factors that may affect the main results, will be considered. Relevant trials will be excluded to test the robustness of the study results.

Language restriction: No.

Country(ies) involved: China.

Keywords: acupuncture; upper limb dysfunction; stroke; rehabilitation; network meta-analysis; protocol

Contributions of each author:

Author 1 - Yanxin Yu drafted the manuscript.
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