INPLASY

Efficacy and safety of Gong's Brain Acupuncture for post-stroke motor dysfunction: a protocol for systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Preliminary searches.

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 30 June 2026 and was last updated on 30 June 2026.

INTRODUCTION

Review question / Objective This systematic review will assess randomized controlled trials to evaluate the efficacy and safety of Gong's Brain Acupuncture used alone or as an adjunctive therapy for post-stroke motor dysfunction and compare it with non-Gong's Brain Acupuncture controls.

Rationale Post-stroke motor dysfunction is a common form of disability after stroke. It may manifest as hemiplegia, decreased limb motor control, abnormal muscle tone, spasticity, impaired balance, or reduced performance of activities of daily living, and it severely affects patients' rehabilitation progress and quality of life. Gong's Brain Acupuncture, a needle technique characterized by regulating brain function and promoting neural recovery, has been used clinically in the treatment of post-stroke functional disorders. Systematically reviewing its efficacy and safety for post-stroke motor dysfunction will consolidate existing clinical evidence and provide a basis for clinical decision-making and future research.

Condition being studied The condition of interest is post-stroke motor dysfunction. Stroke, whether ischemic or hemorrhagic, can leave patients in the acute or recovery phases with varying degrees of motor dysfunction, often manifesting as hemiplegia, reduced limb motor control, abnormal muscle tone, spasticity, impaired balance, or decreased gait ability. These dysfunctions restrict daily living activities, increase caregiving burden and affect long-term rehabilitation outcomes and quality of life. This review focuses on the impact of Gong's Brain Acupuncture on clinical outcomes related to post-stroke motor dysfunction.

METHODS

Search strategy We will systematically search CNKI, WanFang, VIP, SinoMed, PubMed, Web of Science, Embase and the Cochrane Library. The planned search period will be from database inception to 30 June 2026. Search terms will cover

intervention and condition concepts. Chinese intervention terms: 脑针 (brain acupuncture), 宫氏脑针 (Gong's Brain Acupuncture), 宫式脑针, 宫氏原极针, 原极针; Chinese condition terms: 脑卒中 (stroke), 中风, 脑梗死 (cerebral infarction), 脑梗塞, 脑梗死后遗症, 脑卒中后遗症, 偏瘫 (hemiplegia), 半身不遂, 运动功能障碍 (motor dysfunction). English intervention terms: "cerebral acupuncture", "brain acupuncture", "Gong's Brain Acupuncture", "Gong brain acupuncture"; English condition terms: stroke, "cerebral infarction", hemiplegia, "post-stroke", "motor dysfunction". Synonymous terms will be combined with OR and intervention and condition terms will be combined with AND. To maximize sensitivity, no study-design filter will be used at the search stage; trial design will be determined during title-abstract and full-text screening based on the eligibility criteria. We will also manually check reference lists of included studies and related reviews and search clinical trial registries such as the Chinese Clinical Trial Registry and ClinicalTrials.gov to identify additional studies. Only Chinese and English language publications will be included.

Participant or population Participants are patients with post-stroke motor dysfunction. They must meet recognized diagnostic criteria for stroke or have a stroke confirmed by CT, MRI or other imaging, and may have either ischemic or hemorrhagic stroke. Motor dysfunction may manifest as hemiplegia, decreased limb motor function, abnormal muscle tone, spasticity, impaired balance or reduced gait ability. No restrictions will be placed on sex, age, disease duration or stage.

Intervention The intervention is Gong's Brain Acupuncture. Studies will be included where Gong's Brain Acupuncture is used alone or added to identical conventional care in the experimental group. Trials that explicitly use Gong's Brain Acupuncture, Gong's Yuanji needle, Yuanji needle or techniques considered part of the Gong's Brain Acupuncture system will be eligible. Studies using only scalp acupuncture, traditional body acupuncture, electro-acupuncture, abdominal acupuncture, acupoint injection, tuina or moxibustion without a Gong's Brain Acupuncture component will not be considered as the intervention.

Comparator Comparators may include conventional care, rehabilitation training, pharmacological therapy, sham brain acupuncture or the same basic treatment provided to both groups without the addition of Gong's Brain Acupuncture. When both groups receive basic treatment, the basic treatment should be essentially identical so that the main difference is the presence or absence of Gong's Brain Acupuncture. Comparators containing a Gong's Brain Acupuncture component will not be included as the primary comparison.

Study designs to be included Randomized controlled trials will be included. Non-randomized controlled studies, cohort studies, case-control studies, case series, case reports, reviews, conference abstracts, animal studies and basic laboratory studies will be excluded.

Eligibility criteria Inclusion criteria: ① Participants are clearly diagnosed post-stroke motor dysfunction patients, with stroke diagnosis meeting recognized criteria or confirmed by CT, MRI or other imaging; ② Study design is randomized controlled trial; ③ The experimental group receives Gong's Brain Acupuncture alone or in addition to basic treatment that is essentially the same in both groups; ④ The control group receives conventional care, rehabilitation training, pharmacological therapy, sham brain acupuncture or the same basic treatment without Gong's Brain Acupuncture. Exclusion criteria: ① Non-randomized controlled studies, animal studies, basic laboratory studies, reviews, case reports, conference abstracts and duplicate publications; ② Interventions that do not include Gong's Brain Acupuncture or cannot be determined to belong to the Gong's Brain Acupuncture system; ③ Trials in which the experimental and control groups differ in co-interventions other than Gong's Brain Acupuncture, making it impossible to evaluate its independent or additive effect.

Information sources We will search CNKI, WanFang, VIP, SinoMed, PubMed, Web of Science, Embase and the Cochrane Library. The planned search period will be from database inception to 30 June 2026. We will also review reference lists of included studies and relevant reviews and search trial registries such as the Chinese Clinical Trial Registry and ClinicalTrials.gov to identify additional studies.

Main outcome(s) The primary outcome is motor function, assessed mainly using the Fugl-Meyer Assessment (FMA). We will prioritise extraction of scores at the end of the intervention or change scores from baseline. If studies report separate FMA scores for upper and lower limbs, these will

be extracted and analysed separately as data permit.

Additional outcome(s) Secondary outcomes will include: ① Neurological impairment measures such as the NIHSS, CSS or other scales; ② Balance function measured by the Berg Balance Scale (BBS); ③ Activities of daily living measured by the Barthel Index (BI) or Modified Barthel Index (MBI); ④ Muscle tone, spasticity or other motor function-related outcomes; ⑤ Overall clinical efficacy; ⑥ Adverse events or safety-related outcomes.

Data management Retrieved records will be managed and deduplicated using NoteExpress, EndNote or other reference management software. Two researchers will independently screen titles and abstracts, assess full texts and extract data, and will cross-check each other's results. Extracted items will include the first author, publication year, participant characteristics, sample size, interventions, comparators, treatment duration, outcome measures, adverse events and information for risk-of-bias assessment. Disagreements will be resolved through discussion and, if necessary, consultation with a third researcher. When data are unclear or missing, the original authors will be contacted for additional information.

Quality assessment / Risk of bias analysis Two reviewers will independently assess the risk of bias in included trials using the Cochrane tool for assessing risk of bias in randomized trials. Domains assessed will include the randomization process, deviations from intended interventions, missing outcome data, outcome measurement, selective reporting and other potential sources of bias. Each study will be classified as being at low risk, having some concerns or at high risk of bias. Disagreements will be resolved by discussion, and a third reviewer will adjudicate if necessary.

Strategy of data synthesis Meta-analyses will be performed using R. For continuous outcomes, mean differences (MD) or standardized mean differences (SMD) with 95% confidence intervals will be calculated depending on scale consistency. For dichotomous outcomes, risk ratios (RR) with 95% confidence intervals will be used. Statistical heterogeneity will be assessed using the χ^2 test and the I^2 statistic. A fixed-effect model will be applied when $I^2 \leq 50\%$ and clinical heterogeneity is minimal; a random-effects model will be applied when $I^2 > 50\%$ or there is evident clinical heterogeneity, and sources of heterogeneity will be explored. If at least 10 studies are available for an outcome, a funnel plot will be constructed to assess potential publication bias, supplemented by Egger's or Begg's test where appropriate; if fewer than 10 studies are available, publication bias will be assessed qualitatively without a funnel plot. When data cannot be pooled due to insufficient numbers, differences in outcome measures or data formats, a narrative synthesis will be presented.

Subgroup analysis If sufficient studies and data are available, subgroup analyses will be conducted based on potential sources of heterogeneity. Planned subgroup factors include stroke type or disease stage, duration of motor dysfunction, length of treatment, use of Gong's Brain Acupuncture as standalone or adjunct therapy, comparator type, type of outcome scale and whether motor function relates to the upper or lower limb. If data are insufficient, results will be summarised narratively.

Sensitivity analysis If data and study numbers permit, sensitivity analyses will be conducted using R. A leave-one-out approach will be employed, sequentially removing individual studies to examine the robustness of pooled effects. If necessary, we will also reanalyse data excluding studies with high risk of bias, small sample sizes or special intervention or comparator features to observe changes in effect estimates and heterogeneity. If sensitivity analyses materially alter the results, possible explanations will be analysed and conclusions interpreted cautiously.

Language restriction Only studies published in Chinese or English will be included.

Country(ies) involved Jincheng, Shanxi, China.

Keywords Gong's Brain Acupuncture; stroke; motor dysfunction; randomized controlled trial; systematic review; meta-analysis.

Dissemination plans Upon completion of this systematic review and meta-analysis, the findings will be submitted to a peer-reviewed journal for publication.

Contributions of each author

Author 1 - Xinxin Zhang - Responsible for study conception, protocol design, drafting of the registration protocol, development of the search strategy, study coordination and drafting the first manuscript.
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Author 2 - Yucheng Chang - Participated in developing the search strategy and conducting the literature search; independently conducted title and abstract screening, full-text screening and data extraction with another researcher, and contributed to data checking.
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Author 3 - Mi Guo - Participated in data organization, checking of literature information and risk-of-bias assessment; independently carried out quality assessment of included studies with another researcher and contributed to manuscript revisions.
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Author 4 - Yuhong Dou. - Involved in study design and methodological guidance; assisted with discussion and adjudication when discrepancies arose in literature screening, data extraction or risk-of-bias assessment; contributed to revision of the manuscript.
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Author 5 - Jie Zhang - Participated in literature screening and data extraction; independently performed title and abstract screening, full-text screening and data extraction with another researcher, and contributed to cross-checking study data.
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Author 6 - Jinjiao Niu - Contributed to data organization and verification of information from included studies; independently conducted risk-of-bias assessment with another researcher and helped check the results.
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Author 7 - Zhanxin Li - Responsible for study conception, methodological oversight, development of the statistical analysis plan, interpretation of the meta-analysis results and critical review of key sections of the manuscript; participated in adjudication when needed.
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