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# An Overview of Systematic Reviews of Acupuncture for Dysphagia Post-acute Stroke: a protocol

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## **Abstract**

**Introduction:** The results of previous systematic reviews (SRs) and

meta-analyses on acupuncture for post-acute stroke dysphagia have been conflicting. This overview systematically will aim to summarize and evaluate the quality of the existing SRs and meta-analyses with the aim of identifying whether acupuncture could provide a therapeutic option to treat patients with dysphagia following a stroke.

**Methods:** A systematic search of seven electronic databases (Pubmed, EMBASE, Cochrane library, CNKI, Wanfang, SinoMed and VIP) will be performed according to a predefined search strategy for SRs and meta-analyses of randomized controlled trials (RCTs) and quasi-RCTs on acupuncture for dysphagia post-acute stroke.

Two authors will independently select SRs and meta-analyses and collect appropriate data. The reporting quality of included SRs and meta-analyses will be assessed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The revised Assessment of Multiple Systematic Reviews (AMSTAR 2) will be used to assess the quality of the SRs and meta-analyses. If necessary, GRADE will be used to rate the quality of evidence.

**Results:** This overview will identify current SRs and meta-analyses of RCTs or quasi-RCTs of acupuncture treatment for dysphagia post-acute stroke.

**Discussion:** This overview will evaluate current evidence to help answer the question - is acupuncture a potentially effective treatment for dysphagia after stroke.

**PROSPERO REGISTRATION NUMBER:** CRD42019134163

**Keywords:** Acupuncture, dysphagia, post-acute stroke, overview, protocol, systematic reviews, meta analyses

## 1. Introduction

According to the Global Burden of Disease study in 2016<sup>[1]</sup>, the global lifetime

risk of stroke, –irrespective of gender is approximately 25% for those over the age of 25 years. Death caused by stroke ranks second as a leading cause of adult mortality and disability<sup>[2]</sup>. Meanwhile between 37% to 78% of stroke survivors will suffer from dysphagia, showing clinical symptoms such as coughing or difficulty swallowing when drinking water, or eating slowly<sup>[3]</sup>, which can thus reduce their quality of life. In addition, it may also further threaten their life through dehydration, pneumonia or chest infection resulting from misaspiration, or even death<sup>[3,4]</sup>.

Guidelines recommend early screening of post-acute stroke patients to prevent disability, pneumonia or chest infection and death after stroke<sup>[5]</sup>. However it is still uncertain whether this can reduce these risks, because the current screening strategy for dysphagia after stroke will rely not only on their accuracy and reliability but also on the management interventions adopted<sup>[6]</sup>. Thus there are substantial increasing economic costs for care and rehabilitation after stroke<sup>[2]</sup>.

Acupuncture, which has been widely used for rehabilitation after stroke, can be also used for dysphagia after stroke. Systematic reviews (SRs) and meta analyses of randomized controlled trials (RCTs) are recognized as the best way to assess the healthcare interventions. A Cochrane SR published in 2012, reported that acupuncture can reduce the prevalence of dysphagia, alleviate clinical symptoms such as difficulty swallowing and meanwhile improve the life quality of the patients<sup>[7]</sup>. However the latest updated Cochrane review on swallowing therapy, included acupuncture and failed to show a significant effect on the outcomes of dependency/disability, fatality at the end of the trial, death or misaspiration rate<sup>[8]</sup>.

Systematic reviews and meta analyses about the use of acupuncture for stroke or stroke-related disorders have been published, and there are some different and conflicting results. Several overviews of these SRs have been performed to identify effective treatment, but there is no specific overview focusing on the SRs and meta-analyses on acupuncture for dysphagia

post-acute stroke. This overview is aimed to specifically assess the current evidence quality of SRs and meta-analyses about the effectiveness of acupuncture for dysphagia after stroke.

## **2. Methods**

### **2.1 Protocol and registration**

The method used for this protocol will be performed according to the criteria for conducting overviews of SRs and meta-analyses given in the Cochrane Handbook of Systematic Reviews of Interventions and “Preferred Reporting Items for Systematic Review <sup>[9]</sup>. This protocol of overview has been registered on the International prospective register of systematic reviews (PROSPERO: CRD42019134163). As this review will only include published SRs and meta analyses, ethics approval is not necessary.

### **2.2 Types of reviews**

This study will include published SRs and meta-analyses of RCTs or quasi-RCTs that explored the effects of acupuncture alone or combination with other treatments. The SRs and meta-analyses that will be included must report the results of the effect of an acupuncture intervention on dysphagia after stroke.

### **2.3 Type of population**

We will include reviews of acupuncture for dysphagia after stroke. There will be no restriction on the population of this study.

### **2.4 Types of intervention**

The intervention will include acupuncture (including electro-acupuncture) alone or in combination with other treatments (including placebo, routine therapy, western medicine or rehabilitation training).

### **2.5 Types of comparisons**

The comparison treatment will include sham-acupuncture, herbal, routine therapy, western medicine or rehabilitation training.

### **2.6 Types of outcomes**

The primary outcomes of this overview will be any effect-related outcomes such as: swallowing ability (assessed by fiberoptic endoscopic examination of swallowing (FEES) or a video fluoroscopic swallowing study (VFSS)) or incidence of pneumonia/ chest infection at the end of the trial. Secondary outcomes will be death or water swallow test, penetration aspiration score, functional oral intake scale (FOIS) at the end of the trial, or the length of inpatient stay.

## 2.7 Search strategy for identification of SRs and meta-analyses

We will systematically search seven major Chinese and English electronic databases for published SRs and meta-analyses from their inception to May 27th 2019: Wanfang Database and China Science Technology Journal Database (VIP), Sino-Med Database (including China Biology Medicine disc (CBM)), EMBASE, PubMed, the Cochrane Library and China National Knowledge Infrastructure (CNKI). The detailed search strategy in PubMed is given in Appendix B.

### 2.7.1 Selection of studies

Two authors will respectively select studies by titles and abstracts according to the predefined eligibility criteria to identify relevant SRs and meta-analyses and then they will independently screen full texts reviews for final inclusion. Any disagreements between the two authors will be resolved through discussion and consultation with a third author if necessary. (Appendix A:Figure 1)

### 2.7.2 Data extraction

Two reviewers will respectively extract the data of all included SRs and meta-analyses following the predefined data extraction tables. Any disagreements between the two reviewers will be resolved through discussion and consultation with a third author if necessary. Data extraction tables will be established by Excel software. We will extract the following data information of all included SRs and meta analyses: study characteristics of first author name, number of authors with an evidence based medicine (EBM) background,

number of authors, year of publication, journal name, number of primary studies and patients, interventions, country of first author, adverse effects, outcomes, conclusions.

### 2.7.3 Data synthesis and presentation

We will enter the extracted data of the included SRs and meta-analyses and data will be presented as percentages and frequencies. Relative risk (RR) or odds ratios (OR) will be used when the effect value is a binary variable in systematic reviews; if the effect value is a continuous variable, the mean difference (MD) or standard mean difference (SMD) will be used.

Summary tables will be used to provide data in a structured format. Outcomes which are not quantitative will be descriptively reported. The results of the quality of evidence, quality of reviews and effect sizes will be presented graphically. If the same RCTs are being included in different SRs or meta-analysis, which yield different interpretations we will just assess the methodological quality and reporting quality of these studies.

### 2.8 Subgroup analysis

Subgroup analyses will be conducted as the following: populations of patient (such as acute or convalescent period of stroke), interventions (acupuncture or electro-acupuncture alone/ acupuncture or electro-acupuncture combined with other treatments), comparisons, outcomes and study designs.

### 2.9 Quality assessment

#### 2.9.1 Methodological quality

The Assessment of Multiple Systematic Reviews 2 (AMSTAR2) will be used to evaluate the methodological quality of the included systematic reviews and meta-analyses. AMSTAR is a quality assessment tool will be used just for SRs of randomized controlled trials, while AMSTAR2 is an update of AMSTAR, which can be used to appraise SRs of intervention trials including both randomized and nonrandomized controlled trials<sup>[10]</sup>. There are 16 items in the scale. Items 2, 4, 7, 9, 11, 13 and 15 are considered to be critical items affecting the production of the system review and the validity of the results,

while other items are considered as non-critical items. Overall quality of SR and meta-analysis will be evaluated as follows: the quality of the SR and meta-analysis will be assessed as high if there is no or just one non-critical weakness; moderate if there is more than one non-critical weakness; low if there is just one critical flaw, no matter with or without non-critical weaknesses; critically low if there is more than one critical flaw, no matter with or without non-critical weaknesses.

Two authors will respectively assess the methodological quality of each included SR and meta-analysis by using the AMSTAR2 tool. The 16 criteria will be assessed of 'Yes' (items are answered completely and met the requirements of the sub-items), 'no' (items are absent or evaluation is inappropriate), or 'Partial yes' (done some of the items). Any discrepancies in the ratings of the each criteria will be resolved by discussion or a third author will be consulted if necessary.

#### 2.9.2 Quality of the evidence

The tool for assessing the quality of the included evidence will be extracted. If no tool, we will use GRADE to assess the quality of body of evidence in these SRs and meta-analyses and judgments will be made whether to upgrade or downgrade the quality level, according to the GRADE working group<sup>[11]</sup>. Any discrepancies in the ratings of the GRADE will be resolved by discussion or a third author will be consulted if necessary.

#### 2.9.3 Reporting quality

The reporting quality of the SRs and meta-analyses will be assessed by the internationally recognized PRISMA statement<sup>[12]</sup>. The 27 items are used to assess whether the reports are standardized or not. Any discrepancies between the two authors will be resolved by discussion, or if necessary, judgment will be made by a third author.

### **3. Possible limitations**

Although this overview will be conducted using systematically searching strategies of seven databases (English and Chinese), relevant SRs and meta-



analyses.

#### **4.Results in the final overview**

The current SRs and meta-analyses of RCTs or quasi-RCT of acupuncture treatment for dysphagia after stroke will be identified and the result will be presented, including the basic characteristics of the included SRs or meta-analyses, the quality of the systematic reviews.

#### **5. Discussion**

Several SRs and meta analyses investigating the acupuncture treatment for the dysphagia post-acute stroke have been published but have reached different conclusions<sup>[7-8,13-15]</sup>. One suggested that acupuncture when used in stroke rehabilitation may offer additional benefits in rehabilitation medicine<sup>[16]</sup>. While low quality evidence showed that acupuncture significantly resulted in reducing the number of stroke patients with dysphagia at the end of trial, acupuncture did not improve swallowing function of the patients<sup>[8]</sup>. Another meta-analysis showed that the recent evidence supports the effectiveness and safety of acupuncture in treatment dysphagia after stroke in the short-term compared to rehabilitation training or medication treatment<sup>[14]</sup>.

An overview of SRs and meta analyses of acupuncture for stroke <sup>[17]</sup> systematically reviewed published SRs and meta analyses of acupuncture for stroke and stroke-related disorders by Overview Quality Assessment Questionnaires (OQAQ), showed that acupuncture therapy could significantly improve clinical symptoms in the severity of dysphagia when combined the results of video-fluoroscopic swallowing study ( VFSS ) and water-swallowing test, and the improvement was even greater when only considered water-swallowing test results, but quality of evidence in this study was not rated by GRADE or other tools for assessing the evidence quality.

Thus to address these evidence gaps and to support decision making, it is necessary to conduct an overview of the evidence about the current systematic reviews and meta-analyses of prospective studies. This study will undertake an overview of SRs and meta-analyses of acupuncture for

dysphagia post-acute stroke using PRISMA and AMSTAR2. As there is no item aimed at the GRADE assessment for SRs and meta-analyses in AMSTAR2, we will also use GRADE to assess the overall quality of evidence of outcomes for the SRs and meta-analyses if necessary.

### **Conflict of interest**

None

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### **Contributors**

NR conceptualized the study, XL and NR designed the study and organized the team. ZYT and XL designed the literature search, developed and refined the study protocol. JPL gave methodological help and YG gave clinical suggestions. CYZ and DHX will undertake study selection and data extraction, ZYT and SBL will undertake evidence quality with GRADE, methodological quality with AMSTAR2 and reporting quality with PRISMA. ZYT will undertake analysis, interpretation and report writing. NR and XL will draft the publication and all authors will be asked to comment and revise. All authors have read and approved this manuscript.

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## Appendix A: Figure 1

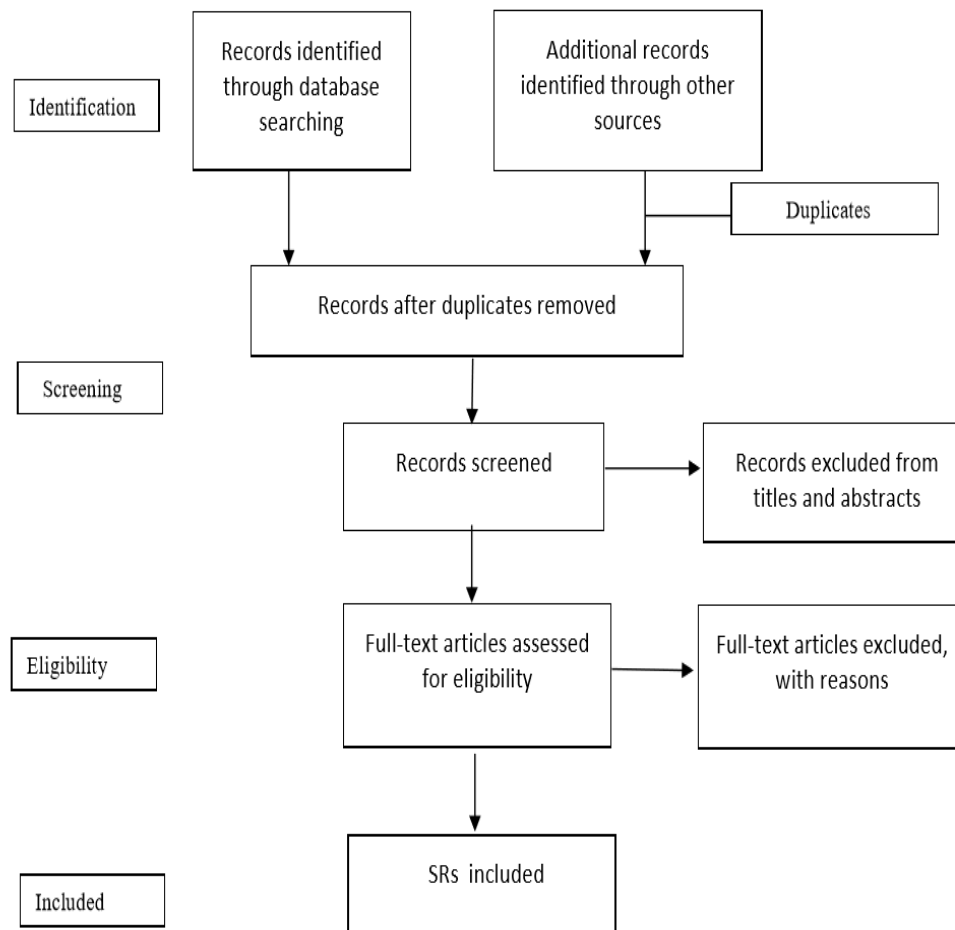


Figure 1 Flow chart of literature selection

## Appendix B

## Searching strategy on PubMed

- #1 Deglutition Disorders [Title/Abstract]
- #2 Deglutition Disorder [Title/Abstract]
- #3 Dysphagia [Title/Abstract]
- #4 Disorders, Deglutition [Title/Abstract]
- #5 Swallowing Disorders [Title/Abstract]

- #6 Swallowing Disorder
- #7 Swallowing difficult? [Title/Abstract]
- #8 Swallowing dysfunction [Title/Abstract]
- #9 Oropharyngeal [Title/Abstract]
- #10 Dysphagia, Oropharyngeal [Title/Abstract]
- #11 Esophageal [Title/Abstract]
- #12 Dysphagia, Esophageal [Title/Abstract]
- #13 Deglutition [Title/Abstract]
- #14 Pseudobulbar Palsy [Title/Abstract]
- #15 Pseudobulbar Palsies [Title/Abstract]
- #16 Pseudobulbar Paresis [Title/Abstract]
- #17 Spastic Bulbar Palsy [Title/Abstract]
- #18 Spastic Bulbar Palsies [Title/Abstract]
- #19 Bulbar Palsies, Spastic [Title/Abstract]
- #20 Bulbar Palsy, Spastic [Title/Abstract]
- #21 Palsies, Spastic Bulbar [Title/Abstract]
- #22 Palsy, Spastic Bulbar [Title/Abstract]
- #23 or/1-22
- #24 Stroke [ms]
- #25 Stroke? [Title/Abstract]
- #26 post?stroke [Title/Abstract]
- #27 Cerebrovascular Accident? [Title/Abstract]

- #28 CVA (Cerebrovascular Accident) [Title/Abstract]
- #29 CVAs (Cerebrovascular Accidents) [Title/Abstract]
- #30 Cerebrovascular Apoplexy [Title/Abstract]
- #31 Apoplexy, Cerebrovascular [Title/Abstract]
- #32 Vascular Accident?, Brain [Title/Abstract]
- #33 Brain Vascular Accident [Title/Abstract]
- #34 Brain Vascular Accidents [Title/Abstract]
- #35 Vascular Accidents, Brain [Title/Abstract]
- #36 Cerebrovascular Stroke? [Title/Abstract]
- #37 Stroke?, Cerebrovascular [Title/Abstract]
- #38 Apoplexy [Title/Abstract]
- #39 Cerebral Stroke [Title/Abstract]
- #40 Cerebral Stroke? [Title/Abstract]
- #41 Stroke, Cerebral [Title/Abstract]
- #42 Acute Cerebrovascular Accident? [Title/Abstract]
- #43 Cerebrovascular Accident?, Acute [Title/Abstract]
- #44 Cerebral infraction [Title/Abstract]
- #45 Brain infraction [Title/Abstract]
- #46 Cerebral embolism [Title/Abstract]
- #47 or/24-46
- #48 systematic review [Title/Abstract]
- #49 Review [Title/Abstract]

- #50 Meta-Analysis [Title/Abstract]
- #51 Meta Analysis [Title/Abstract]
- #52 Data Pooling [Title/Abstract]
- #53 Data Poolings [Title/Abstract]
- #54 Overviews, Clinical Trial [Title/Abstract]
- #55 Clinical Trial Overviews [Title/Abstract]
- #56 Clinical Trial Overview [Title/Abstract]
- #57 Overview, Clinical Trial [Title/Abstract]
- #58 or/48-57
- #59 Acupuncture Treatment [Title/Abstract]
- #60 Acupuncture Treatment? [Title/Abstract]
- #61 Acupuncture [Title/Abstract]
- #62 Acupuncture Therapy [Title/Abstract]
- #63 Therapy, Acupuncture [Title/Abstract]
- #64 Pharmacopuncture [Title/Abstract]
- #65 Electroacupuncture [Title/Abstract]
- #66 Point [Title/Abstract]
- #67 Acupoint [Title/Abstract]
- #68 or/59-67
- #69 23 and 47
- #70 69 and 58
- #71 70 and 68

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