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Wang, RQ<sup>1</sup>; Zhan, YJ<sup>2</sup>; Zhu, WY<sup>3</sup>; Pei, J<sup>4</sup>.**ADMINISTRATIVE INFORMATION****Support** - None.**Review Stage at time of this submission** - Data extraction.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202380095

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 August 2023 and was last updated on 22 August 2023.

**INTRODUCTION**

**Review question / Objective** This overview aims to summarize the published evidence on acupuncture for AD, which can provide more highly focused evidence to facilitate clinical decision-making. Specifically, the primary objective is to evaluate the methodological and reporting quality of acupuncture for treating AD, while the secondary objective is to summarize its efficacy and safety.

**Condition being studied** In recent years, acupuncture has emerged as a potential therapeutic intervention for the management of Alzheimer's disease (AD). With the widespread use of acupuncture in the treatment of AD, relevant SRs have been published. High-quality SRs provide objective and reliable evidence that can guide clinical practice. However, the quality of available SRs varies widely, and due to their methodological and reporting deficiencies, conclusions may be biased and even influence medical decision-making. In particular, overview is

a validated method to evaluate the scientific quality of published SRs and summarize the clinical evidence reported in meta-analyses in a specific field. However, the efficacy and safety of acupuncture and the methodological quality of published SRs remained unknown. Therefore, we designed an overview to address this gap.

**METHODS****Search strategy**

#1 Alzheimer Disease[Mesh]  
#2 Alzheimer Disease [Title/Abstract] OR Alzheimer's Disease [Title/Abstract] OR Senile Dementia [Title/Abstract] OR Alzheimer Dementia [Title/Abstract] OR Dementia [Title/Abstract] OR AD [Title/Abstract]  
#3 #1 OR #2  
#4 acupuncture [Mesh]  
#5 acupuncture [Title/Abstract] OR needle [Title/Abstract] OR needling [Title/Abstract] OR acupoint [Title/Abstract] OR electroacupuncture [Title/Abstract] OR auricular acupressure [Title/Abstract] OR acupoint [Title/Abstract] OR warm needle [Title/

Abstract] OR scalp needle [Title/Abstract] OR fire acupuncture [Title/Abstract] OR transcutaneous electrical acupoint stimulation [Title/Abstract] OR moxibustion [Title/Abstract] OR intradermal acupuncture [Title/Abstract]

#6 #4 OR #5

#7 "Meta-Analysis" [Publication Type] OR "Meta-Analysis as Topic"[Mesh]

#8 (Meta analys\*[Title/Abstract]) OR Systematic review\*[Title/Abstract]

#9 #7 OR #8

#14 #3 AND #6 AND #9.

**Participant or population** Participants were definitively diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)[[[] Association A P. Diagnostic and Statistical Manual of Mental Disorders, fourth edition ( DSM- IV)[M]. Washington DC: American Psychiatric Association, 1994.]], the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA)[[[] McKhann G, Drachman D, Folstein M, et al. Clinical diagnosis of Alzheimer's disease: report of the NINCDS-ADRDA Work Group under the auspices of Department of Health and Human Services Task Force on Alzheimer's Disease[J]. *Neurology*, 1984,34(7):939-944. IF:9.9]], the National Institute on Aging and the Alzheimer's Association Workgroup (NIA-AA)[[[] McKhann G M, Knopman D S, Chertkow H, et al. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease[J]. *Alzheimers Dement*, 2011,7(3):263-269. IF:14.0]] or other internationally recognized clinical guidelines.

**Intervention** The treatment group was treated with acupuncture (e.g., manual acupuncture, electroacupuncture, scalp acupuncture, auricular acupressure), acupuncture combined with conventional therapy (e.g., neuroprotective agent, cognitive training or cognitive rehabilitation) or herbal medicine.

**Comparator** The control group received conventional therapy, herbal medicine, sham acupuncture or no treatment.

**Study designs to be included** Quantitative systematic reviews (i.e., pairwise meta-analyses) of randomized clinical trials (RCTs) about acupuncture for AD. We will include published systematic reviews focusing on acupuncture as a treatment for AD.

**Eligibility criteria** Exclusion criteria included (1) conference abstracts, comments, dissertations, network meta analysis, protocols, and overviews; (2) SRs comparing different acupuncture treatments; (3) articles with duplicate publications, incomplete data, or unavailable full text.

**Information sources** A comprehensive literature search was conducted using the following databases: PubMed, Embase, Web of Science, the Cochrane Library, Chinese National Knowledge Infrastructure (CNKI), Chinese Scientific Journal Database (VIP), Wanfang Database, and Chinese Biomedical Literature Database (SinoMed) databases from inception to 1 August 2023. In addition, the reference list of previous overviews were manually checked.

**Main outcome(s)** 1. The efficacy and safety outcomes of acupuncture for AD. 2. The methodological quality of systematic reviews regarding acupuncture for AD.

**Quality assessment / Risk of bias analysis** A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR-2) is a broadly accepted tool for assessing the methodological quality of SRs. It contains 16 items, of which items 2, 4, 7, 9, 11, 13, and 15 are critical. The assessment results of each item are classified as "Yes" (Y), "No" (N), and "Partially Yes" (PY). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 was used to evaluate the quality of the reports, which included 27 items (42 subitems) in 7 domains. Each item is scored according to the completeness of the report: 1 point for a complete report (Y), 0.5 points for a partial report (PY), and 0 points for no report (N), for a total of 42 points.

**Strategy of data synthesis** The basic characteristics and pooled effect sizes of the included SRs were descriptively summarized. Microsoft Excel 2019 (Microsoft Corporation, Redmond, WA, United States) and SPSS (version 25.0, IBM, Chicago) software were used to analyze the data. Univariate and multivariate linear regression analyses were used to examine whether different study characteristics (i.e., publication year, sample size, publication language, funds support, and protocol) potentially affect methodological and reporting quality. The Graphical Representation of Overlap for Overviews (GROOVE) tool can be used to assess the degree of overlap among the primary studies included in SRs. It estimated the overlaps of the primary studies by calculating the corrected coverage area (CCA). The degree of overlap was classified as slight overlap (CCA: 0% to 5%), moderate overlap

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(CCA: 6% to 10%), high overlap (CCA: 11% to 15%), and very high overlap (CCA > 15%). Interpret the graphical representation to determine the overlap between the studies. Areas of overlap represent studies that are included in multiple comparisons or outcomes, while areas with no overlap represent unique studies. Meanwhile, evidence mapping was used to visualize the methodological quality scores (x-axis) and reporting quality scores (y-axis) of each SR using a bubble plot. Each bubble represents an article, with bubble size indicating the total sample size or number of RCTs and bubble color representing the publication language or effective (positive or unclear). The Spearman correlation test was used to evaluate the correlation between the methodological and reporting quality scores. The strength of the correlation was classified as follows: high ( $r_s > 0.7$ ), moderate ( $r_s = 0.4\sim 0.7$ ), and low ( $r_s < 0.4$ ).

**Subgroup analysis** None.

**Sensitivity analysis** None.

**Language restriction** None.

**Country(ies) involved** China.

**Keywords** Acupuncture, Alzheimer's disease, Evidence map; Methodological quality; Reporting quality.

#### **Contributions of each author**

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