

# INPLASY PROTOCOL

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**Conflicts of interest:**  
None declared.

## Efficacy and Underlying Mechanism of Acupuncture in the Treatment of Posttraumatic Stress Disorder: A protocol for systematic review and meta-analysis

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**Review question / Objective:** We aim to compare the efficacy and safety of acupuncture and related therapies for Post-traumatic stress disorder using systematic review and meta-analysis.

**Eligibility criteria:** Participants who were pregnant or suffering from other serious illnesses were excluded. The language is limited to Chinese and English.

**Information sources:** PubMed, Web of Science, Embase, Cochrane Library, China National Knowledge Infrastructure Database (CNKI), WanFang Database, China Biology Medicine Database (CBM), and Chinese Science and Technology Journals Database (VIP).

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 December 2022 and was last updated on 27 March 2023 (registration number INPLASY2022120012).

### INTRODUCTION

**Review question / Objective:** We aim to compare the efficacy and safety of acupuncture and related therapies for Post-traumatic stress disorder using systematic review and meta-analysis.

**Condition being studied:** Post-traumatic stress disorder (PTSD) is a type of psychiatric disorder with severe clinical symptoms and significant impairment of mental health that occurs after an individual has been exposed to unusually intense mental stress. Its core manifestations are traumatic re-experiencing, persistent avoidance, and

persistent heightened alertness, along with symptoms of anxiety, depression, and sleep disturbance. A cross-national epidemiological survey by the World Health Organization (WHO) showed that the lifetime prevalence of PTSD is 3.9% in PTSD patients and 5.6% in trauma-exposed populations, and that half of PTSD patients have persistent symptoms, which causes serious social burden. The current international first-line treatment for PTSD is psychotherapy such as cognitive behavioral therapy, cognitive therapy, and exposure therapy, but about 50% of PTSD patients do not respond to psychotherapy. Apart from psychotherapy, the FDA has only approved paroxetine and sertraline for the treatment of PTSD. However, relevant data indicate that the utility rate of such drugs for PTSD patients is about 40-60% and the abandonment rate is very high. The search for an emerging and effective treatment has therefore become a hot topic of widespread international interest. As a distinctive therapy of traditional Chinese medicine in China, acupuncture takes the advantage of simple operations and few side effects and plays a significant role in treating mental disorders. Acupuncture has shown potential benefits for a variety of mental health disorders including anxiety disorders and substance abuse disorders. Although the clinical effects of acupuncture in the treatment of PTSD-related symptoms have been reported in several clinical studies, the underlying mechanisms have not been clarified, which may be related to the modulation of HPA axis activity and hormonal expression, restoration of neural networks in the hippocampus, and related neurotransmitters.

## METHODS

**Search strategy:** Search with (“Posttraumatic stress disorder” or “PTSD” or “Post-Traumatic Neuroses”) and (“Acupuncture and moxibustion” or “Acupuncture” or “Moxibustion” or “Pharmacopuncture” or “plum-blossom needle” or “elongated needle” or “abdominal acupuncture” or “Electroacupuncture” or “Auricular needle” or “Scalpacupuncture” or “Wrist ankle

needle” or “Superficial needling” or “Warm needling” or “Fire needling” or “Acupoint injection” or “Auricular point” or “Acupoint stimulation” or “needle”) as the search term. The search scope includes PubMed, Web of Science, Embase, Cochrane Library, China National Knowledge Infrastructure Database (CNKI), WanFang Database, China Biology Medicine Database (CBM), and Chinese Science and Technology Journals Database (VIP). The search period was from January 1, 2012, to November 27, 2022, in both Chinese and English.

**Participant or population:** Patients or animals who are diagnosed with Posttraumatic stress disorder of any sex, age or race.

**Intervention:** We will include studies in which intervention groups applied acupuncture alone or in combination with other forms of treatment. We will include studies in which intervention groups applied acupunctur alone or in combination with other forms of tr.

**Comparator:** The control group underwent non-acupuncture therapy such as drug therapy and psychological intervention.

**Study designs to be included:** Randomized controlled trials (RCTs), Clinical studies, Review.

**Eligibility criteria:** Participants who were pregnant or suffering from other serious illnesses were excluded. The language is limited to Chinese and English.

**Information sources:** PubMed, Web of Science, Embase, Cochrane Library, China National Knowledge Infrastructure Database (CNKI), WanFang Database, China Biology Medicine Database (CBM), and Chinese Science and Technology Journals Database (VIP).

**Main outcome(s):** 1、PTSD symptoms, anxiety and fear, sleep disturbance, cognitive symptom, and depression symptoms

2、Neurotransmitters associated with the hippocampus, amygdala, and HPA axis eg. The clinician-administered PTSD scale (CAPS), The PTSD checklist-civilian version (PCL-C), The Hamilton depression rating scale (HAMD), The Hamilton anxiety rating scale (HAMA), and The self-reporting Inventory 90 somatization(SCL-90 somatization).

2、Neurotransmitters associated with the hippocampus, amygdala, and HPA axis.

**Quality assessment / Risk of bias analysis:** The Cochrane Handbook 5.0's quality evaluation guidelines were followed by the risk of the bias assessment tool, which has six components: The integrity of the results, the randomization procedure, the concealment of the allocation scheme, the blinding of the subjects, the treatment implementer, and the outcome measures, the integrity of the results, the no-selective-reporting rule, and the absence of any other sources of bias. Each study's findings were classified as "yes" (low bias), "no" (high bias), or "unclear" (lack of relevant information or uncertain bias).

**Strategy of data synthesis:** The Cochrane Collaboration's RevMan5.4 software was utilized for the meta-analysis. For count data, the odds-risk (OR) and 95% confidence interval (CI) were calculated. For measurement data, mean difference (MD) and 95% confidence interval (95%CI) were employed. The heterogeneity between studies was analyzed using the chi-square test, and the level of heterogeneity was calculated using the  $I^2$  value: Low heterogeneity was indicated by  $I^2 < 50\%$  and the fixed effect model was chosen for the combined analysis. The cause of clinical heterogeneity was examined if  $I^2 > 50\%$ . The random-effects model was applied, and subgroup analysis was utilized to examine the outcomes.

**Subgroup analysis:** The participants were separated into various subgroups in accordance with the intervention measures, and the effect sizes of various groups were estimated and compared between subgroups. We will provide a

narrative summary if we couldn't identify the main source of serve heterogeneity.

**Sensitivity analysis:** If a sensitivity analysis of the data is required, we will identify the cause of heterogeneity by removing the change in effect size following one of the included articles, which reflects the sensitivity of this article, from the analysis.

**Language restriction:** The language is limited to Chinese and English.

**Country(ies) involved:** China (Guangzhou University of Chinese Medicine).

**Keywords:** Acupuncture; PTSD; Meta analysis; Mechanism; animal studies; clinical studies; review.

**Contributions of each author:**

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Author 2 - ShuMin Lin.

Author 3 - DanWei Fang.

Author 4 - BinJing Lin.

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