INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Electroacupuncture for Obstructive Sleep Apnea Hypoventilation Syndrome: A protocol for systematic review and meta-analysis

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Review question / Objective: **In recent years, more and more researchers have used electroacupuncture to treat OSAHS and achieved good results. However, systematic review of the efficacy and safety of electroacupuncture in OSAHS treatment is still lacking. Therefore, it is essential to conduct a systematic evaluation to obtain relatively convincing conclusions about whether electroacupuncture can be a good choice as a CAM therapy for OSAHS.**
Condition being studied: **The Randomized controlled trials (RCTs) are eligible, whether or not the blind method is specifically described. There are no restrictions on languages. Moreover, systemic evaluation, review literature and the full article cannot be obtained will be excluded.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 April 2022 and was last updated on 15 April 2022 (registration number INPLASY202240090).

INTRODUCTION

Review question / Objective: **In recent years, more and more researchers have used electroacupuncture to treat OSAHS and achieved good results. However, systematic review of the efficacy and safety of electroacupuncture in OSAHS treatment is still lacking. Therefore, it is essential to conduct a systematic evaluation to obtain relatively convincing conclusions about whether electroacupuncture can be a good choice as a CAM therapy for OSAHS.**

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METHODS

Search strategy:
#1 obstructive sleep apnea hypoventilation syndrome[ti, ab]
#2 obstructive sleep apnea [ti, ab]
#3 sleep apnea[ti, ab]
#4 OSAHS[ti, ab]
#5 OSA[ti, ab]
#6 #1 or #2-5
#7 electroacupuncture[ti, ab]
#8 electro-acupuncture[ti, ab]
#9 electro-stimulator[ti, ab]
#10 acupuncture[ti, ab]
#11 #7 or #8-10
#12 randomized controlled trials[ti, ab]
#13 randomized trials [ti, ab]
#14 controlled clinical trials[ti, ab]
#15 #12 or #13-14
#16 #6 and #11 and #15.

Participant or population: Patients should be clearly diagnosed with OSAHS. No restrictions on age, sex, and race were imposed.

Intervention: Patients with OSAHS in the experimental groups mainly received electroacupuncture.

Comparator: Patients with OSAHS in the control group received no specific treatment or sham acupuncture, or nCPAP therapy.

Study designs to be included: RCTs.

Eligibility criteria: 2.1.1. Types of studies. The Randomized controlled trials (RCTs) are eligible, whether or not the blind method is specifically described. There are no restrictions on languages. Moreover, systemic evaluation, review literature and the full article cannot be obtained will be excluded.2.1.2. Types of participants. Patients should be clearly diagnosed with OSAHS. No restrictions on age, sex, and race were imposed.2.1.3. Type of interventions2.1.3.1. Control interventions. Patients with OSAHS in the control group received no specific treatment or sham acupuncture, or nCPAP therapy.2.1.3.2. Experimental interventions. Patients with OSAHS in the experimental groups mainly received electroacupuncture.2.1.4. Types of outcome measures2.1.4.1 Primary outcomes. Apnea-hypopnea index (AHI), the minimal oxygen saturation (SaO2min), the longest apnea time.2.1.4.2. Secondary outcomes. Epworth Sleepiness Scale (ESS), Montreal Cognitive Assessment (MoCA), serum interleukin-6 (IL-16) levels, serum NF-kB levels, serum factor-α (TNF-α) levels, adverse events.

Information sources: RCTs of electroacupuncture in the treatment of OSAHS were searched in Web of Science, PubMed, Cochrane Library, Embase, Allied and Complementary Medicine Database (AMED), China Science and Technology Journal Database (VIP), China National Knowledge Infrastructure (CNKI), Wan-fang Database.

Main outcome(s): Apnea-hypopnea index (AHI), the minimal oxygen saturation (SaO2min), the longest apneatime.

Additional outcome(s): Epworth Sleepiness Scale (ESS), Montreal Cognitive Assessment (MoCA), serum interleukin-6 (IL-16) levels, serum NF-kB levels, serum factor-α (TNF-α) levels, adverse events.

Data management: Two researchers will import all the retrieved articles into Endnote X9, and filter and delete duplicate data. Then, two researchers screened the literature according to inclusion and exclusion criteria. The first author, publication year, baseline characteristics of subjects, intervention methods, outcome measures, and other related information were also extracted independently by two researchers. After the above results are extracted, cross-check is required.

Quality assessment / Risk of bias analysis: The risk of bias was assessed by two reviewers according to the bias risk

assessment tool recommended in the Cochrane Manual.

Strategy of data synthesis: Review Manager (Revman), version 5.3, was used to analyze the collected clinical research data. Relative risk (RR) was used to evaluate the enumeration data, and standardized mean difference (SMD) was used to evaluate the measurement data. And the confidence interval (95% confidence interval, CI) was 95%. If heterogeneity among included studies was minor (I2<50%), the fixed effect model was used for analysis. If heterogeneity was significant among the included studies (I2≥50%), the random effect model was used for analysis.[20.21] A value of P<0.10 was considered to suggest statistical heterogeneity.

Subgroup analysis: We will conduct subgroup analyses based on different interventions in the control group. This can analyze the sources of heterogeneity and enhance the persuasiveness of the conclusions.

Sensitivity analysis: We will conduct sensitivity analysis by eliminate one study one by one, to investigate the reliability and stability of the results.

Language: No restrictions on languages.

Country(ies) involved: China.

Keywords: protocol; obstructive sleep apnea hypoventilation syndrome; systematic review; electroacupuncture.

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