

INPLASY PROTOCOL

To cite: Huang et al.
Transcutaneous electrical
acupoint stimulation for the
prevention of postoperative
delirium in elderly patients: A
systematic review and meta-
analysis. Inplasy protocol
202270096. doi:
10.37766/inplasy2022.7.0096

Received: 21 July 2022

Published: 21 July 2022

Corresponding author:
Kai-yu Huang

huangkaiyu0728@qq.com

Author Affiliation:
Ningbo Municipal Hospital of
TCM, Affiliated Hospital of
Zhejiang Chinese Medical
University, Ningbo, China.

Support: NBMHLADP(2022-
ZF01).

**Review Stage at time of this
submission:** The review has
not yet started.

Conflicts of interest:
None declared.

Transcutaneous electrical acupoint stimulation for the prevention of postoperative delirium in elderly patients: A systematic review and meta-analysis

Huang, KY¹; Liang, S²; Xu, YY³.

Review question / Objective: The effectiveness of transcutaneous electrical acupoint stimulation (TEAS) in preventing postoperative delirium (POD) is controversial. The purpose of this systematic review and meta-analysis is to confirm the benefits of TEAS on POD prevention in elderly patients.

Condition being studied: POD is the most common serious complication that usually occurs within a few an acute fluctuating hours to a few days after surgery. It is associated with prolonged hospital stay and increased ICU admission, postoperative neurocognitive disorder, and mortality. TEAS is an easy and noninvasive alternative to needle-based electroacupuncture. It combines the advantages of both acupuncture and transcutaneous electrical nerve stimulation by pasting electrode pads on the acupoints instead of piercing the skin with needles. An increasing number of studies have been published in recent years to support the effectiveness of TEAS in preventing POD. In view of this, we will conduct a systematic review and meta-analysis to confirm the benefits of TEAS on POD prevention in elderly patients.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 July 2022 and was last updated on 21 July 2022 (registration number INPLASY202270096).

systematic review and meta-analysis is to confirm the benefits of TEAS on POD prevention in elderly patients.

Condition being studied: POD is the most common serious complication that usually occurs within a few an acute fluctuating

INTRODUCTION

Review question / Objective: The effectiveness of transcutaneous electrical acupoint stimulation (TEAS) in preventing postoperative delirium (POD) is controversial. The purpose of this

hours to a few days after surgery. It is associated with prolonged hospital stay and increased ICU admission, postoperative neurocognitive disorder, and mortality. TEAS is an easy and noninvasive alternative to needle-based electroacupuncture. It combines the advantages of both acupuncture and transcutaneous electrical nerve stimulation by pasting electrode pads on the acupoints instead of piercing the skin with needles. An increasing number of studies have been published in recent years to support the effectiveness of TEAS in preventing POD. In view of this, we will conduct a systematic review and meta-analysis to confirm the benefits of TEAS on POD prevention in elderly patients.

METHODS

Search strategy: The following electronic databases will be searched: Pubmed, CENTRAL, the China National Knowledge Infrastructure (CNKI), and Wanfang Database. The range of publication time is from the inception of each database to 31 July 2022. The following terms are used to search English databases: ('transcutaneous electrical acupoint stimulation' OR 'TEAS' OR 'electroacupuncture' OR 'acupoint') AND ('delirium' OR 'acute brain syndrome'). Identical search strategies will be used for Chinese databases.

Participant or population: Elderly patients (age ≥ 60 years old) who have any types of surgery will be included.

Intervention: The intervention in selected studies comprises TEAS alone or TEAS on the basis of the control group.

Comparator: The control group comprised a blank control, sham-stimulation therapy, or usual care.

Study designs to be included: Randomized controlled trials (RCTs) published in journals will be included. Trials were required to report statistical methods and accurate data.

Eligibility criteria: RCTs evaluating TEAS for the prevention of POD in elderly surgical patients (age ≥ 60 years old) are eligible for inclusion criteria. The population, intervention, comparison, outcomes, and study criteria (PICOS) are the basis for the criteria selection. Duplicate studies, animal experiments, reviews or case reports are excluded. The articles that failed to provide sufficient information or data are also excluded.

Information sources: RCTs evaluating TEAS for the prevention of POD in elderly surgical patients (age ≥ 60 years old) are searched in Pubmed, CENTRAL, the China National Knowledge Infrastructure (CNKI), and Wanfang Database. The range of publication time is from the inception of each database to 31 July 2022.

Main outcome(s): Incidence of POD is designated as the primary outcome.

Additional outcome(s): Delirium duration is designated as the secondary outcome.

Data management: Two reviewers independently search the databases and evaluate eligible articles for inclusion. Disagreement is resolved by discussion with a third reviewer. The following information is extracted independently by the reviewers: author's name, publication year, sample sizes, type of surgery, details of treatment and control intervention, delirium assessment methods, outcome measures.

Quality assessment / Risk of bias analysis: The Cochrane Collaboration tool is used to assess the risk of bias of the selected studies. The following aspects are assessed independently by two reviews: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other bias. Disagreements are analyzed by the third reviewer.

Strategy of data synthesis: The meta-analysis is performed with RevMan V5.2

software. Risk ratio (RR) is used for dichotomous outcomes and mean difference (MD) is adopted for continuous outcomes. Heterogeneity is examined using the I² test. If the I² value is higher than 50%, the random effects model is used. Otherwise, fixed effects model is utilized. The confidence interval (CI) is established at 95%. P<0.05 were considered statistically significant. Publication bias will be assessed with a funnel plot if sufficient trials (≥10 trials) are included in the meta-analysis.

Subgroup analysis: We will conduct subgroup analysis based on different TEAS administration time-point, TEAS waveform and types of surgery.

Sensitivity analysis: We will conduct sensitivity analyses by removing each study 1 at a time to evaluate the stability of the results.

Country(ies) involved: China.

Keywords: tanscutaneous electrical acupoint stimulation; postoperative delirium; elderly patient; systematic review; meta-analysis.

Contributions of each author:

Author 1 - Kai-yu Huang.

Author 2 - Shuang Liang.

Author 3 - Yong-yi Xu.