INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Pain Neuroscience Education on Reducing Pain and Kinesiophobia: a Study Protocol for a Systematic Review and Meta-analysis

Chang, KV[1].

Review question / Objective: **The objective of this study is to investigate the treatment effect of Pain Neuroscience Education (PNE) on pain intensity and kinesiophobia in patients with chronic neck pain (CNP).**
Condition being studied: **The PICO (population, intervention, comparison, outcome) setting for this meta-analysis includes: (1) P: human participants; (2) I: Pain Neuroscience Education; (3) C: other treatments; and (4) O: changes in pain scores and kinesiophobia.**
Eligibility criteria: **(1) RCTs investigating pain intensity and kinesiophobia before and after PNE; (2) enrolling adults and adolescents diagnosed with CNP based on the area of pain and symptom duration (>12 weeks); (3) the intervention groups were treated with PNE; (4) at least one reference group using treatments not including PNE.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 March 2023 and was last updated on 20 August 2023 (registration number INPLASY202330074).

INTRODUCTION

Review question / Objective: **The objective of this study is to investigate the treatment effect of Pain Neuroscience Education (PNE) on pain intensity and kinesiophobia in patients with chronic neck pain (CNP).**

Rationale: **Prior research has shown that CNP has a prevalence of 29.8% among the general population. PNE is an educational model that aims to provide a detailed description of the neurobiology and neurophysiology of pain processing. While there have been existing studies**

investigating the effect of PNE on pain intensity and kinesiophobia in the CNP population, the clinical effectiveness remains inconclusive. Thus, a systematic review and meta-analysis will be conducted to investigate the treatment effect of PNE on pain intensity and kinesiophobia for patients with CNP.

Condition being studied: The PICO (population, intervention, comparison, outcome) setting for this meta-analysis includes: (1) P: human participants; (2) I: Pain Neuroscience Education; (3) C: other treatments; and (4) O: changes in pain scores and kinesiophobia.

METHODS

Search strategy: Two authors will conduct independent electronic searches in PubMed, Cochrane Library, and ClinicalTrials.gov using the keywords ("pain neuroscience education" OR "pain biology education" OR "therapeutic neuroscience education" OR "neurophysiology education") AND ("chronic neck pain" OR "chronic cervical pain").

Participant or population: Patients with CNP.

Intervention: Pain Neuroscience Education.

Comparator: Usual care or other forms of exercise.

Study designs to be included: Randomized controlled trials (RCTs).

Eligibility criteria: (1) RCTs investigating pain intensity and kinesiophobia before and after PNE; (2) enrolling adults and adolescents diagnosed with CNP based on the area of pain and symptom duration (>12 weeks); (3) the intervention groups were treated with PNE; (4) at least one reference group using treatments not including PNE.

Information sources: Two authors conducted independent electronic searches in PubMed, Cochrane Library, Pedro, and ClinicalTrials.gov using the keywords ("pain neuroscience education" OR "pain biology education" OR "therapeutic neuroscience education" OR "neurophysiology education") AND ("chronic neck pain" OR "chronic cervical pain").

Main outcome(s): The primary outcome is changes in pain scores following PNE or control regimens. The secondary outcome is changes in kinesiophobia following PNE or control regimens.

Data management: Two independent authors will extract data from the recruited studies, including demographic data, study design, details of pain neuroscience education and control regimens, and outcome values.

Quality assessment / Risk of bias analysis: The Cochrane risk of bias tool for randomized trials (version 2, RoB 2, London, United Kingdom) will be used, comprising six major items for evaluating study quality: the randomization process, intervention adherence, missing outcome data, outcome measurement, selective reporting, and overall risk of bias.

Strategy of data synthesis: A random-effects model will be used to pool the effect size on Comprehensive Meta-Analysis software (version 3, Biostat, Englewood, NJ, United States). A two-tailed p-value of less than 0.05 will be considered statistically significant. Hedges' g will be used to quantify the study outcomes. The I^2 and Cochran's Q statistics will be employed to evaluate the degree of heterogeneity across studies.

Subgroup analysis: Subgroup analyses based on PNE regimens and age group of participants will be performed.

Sensitivity analysis: Sensitivity analyses will be performed using the one-study removal method.

Language restriction: No language limit.

Country(ies) involved: Taiwan.

Keywords: neck pain, central sensitization, education, physical therapy, neurosciences.

***Other relevant information:** The protocol was solidified in mid-January 2023, coinciding with the commencement of the preliminary literature search. It was formally submitted for registration on March 20, 2023. We deeply regret any confusion caused by inadvertently selecting an inaccurate status indicator within the system during the protocol submission process.

Contributions of each author:

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