

Comparison of Ultrasound Versus Landmark Guided Injections for Musculoskeletal Pain: A Protocol for An Umbrella Review

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ADMINISTRATIVE INFORMATION**Support -** TSUM.**Review Stage at time of this submission -** Completed but not published.**Conflicts of interest -** None declared.**INPLASY registration number:** INPLASY202450055**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 12 May 2024 and was last updated on 12 May 2024.**INTRODUCTION**

Review question / Objective To consolidate findings from existing systematic reviews and meta-analyses on the effectiveness of ultrasound-guided (USG) versus landmark-guided (LMG) injections at different sites.

Rationale USG injections have gained popularity across healthcare settings as a safer and more precise alternative to other modalities. However, the clinical benefits of USG injections compared to LMG injections are still open to debate. Our umbrella review aims to consolidate findings from existing systematic reviews and meta-analyses on the effectiveness of USG versus LMG injections in various musculoskeletal conditions.

Condition being studied The PICO (population, intervention, comparison, and outcome) settings for this umbrella review includes: Population: Human participants with musculoskeletal pain. Intervention: USG injections. Comparator: LMG

injections. Outcomes: Accuracy, range of motion, pain/function outcomes, and reported adverse events.

METHODS

Search strategy A comprehensive literature search will be conducted in multiple electronic databases including PubMed, EMBASE, MEDLINE, and Web of Science. The search will cover systemic reviews and meta-analyses published from the inception of these databases until March 2024, using the following keywords: "ultrasound," "ultrasonography," "sonography," "landmark," "blind," "anatomical," "palpation," "intra-articular," "joints," "tendon," "bursa," "ligament," "muscle," "pain," "injections," "administration," "aspiration," "review," "systematic review" and "meta-analysis".

Participant or population Human participants with musculoskeletal pain.

Intervention USG injections.

Comparator LMG injections.

Study designs to be included Systemic reviews and meta-analyses.

Eligibility criteria (1) Systemic reviews and meta-analyses investigating the efficacy of USG versus LMG injections in patients with musculoskeletal pain. (2) Reviews reporting on at least one of the specified outcomes.

Information sources Systemic reviews and meta-analyses meeting the inclusion criteria were searched from PubMed, EMBASE, MEDLINE, and Web of Science. Reviews that do not complete a systemic literature search, involving non-musculoskeletal diseases, utilizing imaging methods apart from ultrasound navigation, and devoid of a control group were excluded.

Main outcome(s) The result will report on the injection accuracy, range of motion, pain/functional outcomes, and reported adverse events of USG versus LMG injections.

Data management Data will be extracted independently by two reviewers using a standardized data extraction form. Discrepancies will be resolved through discussion or consultation with corresponding author.

Quality assessment / Risk of bias analysis The methodological quality of the included articles will be assessed with the AMSTAR 2 (A Measurement Tool to Assess Systematic Reviews) critical appraisal tool independently by two authors.

Strategy of data synthesis The extracted data will be narrated at the level of systematic reviews and meta-analyses.

Subgroup analysis Not applicable.

Sensitivity analysis No language restrictions will be imposed to avoid language bias and geographical restrictions to ensure a comprehensive retrieval of available data.

Language restriction No limitation of languages.

Country(ies) involved Taiwan.

Keywords Ultrasound, landmark, injections, accuracy, pain, function.

Contributions of each author

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