



Trigger Point Injections Versus Medical Management for Acute Myofascial Pain: A Systematic Review and Meta-Analysis

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Myofascial Pain

- Myofascial pain is described as pain associated with inflammation or irritation of the muscle or fascia surrounding the muscle
- Myofascial pain is pain due to muscle or fascia inflammation
- Trigger points are hyperirritable nodules within muscle fibers causing pain
- Myofascial pain results from various causes: overuse, trauma, poor posture, stress, or medical issues
- Myofascial pain symptoms: stiffness, restricted motion, weakness
- Untreated pain leads to chronicity, lower quality of life, increased healthcare utilization, and psychological distress
- Multimodal approach: combines non-pharmacological and pharmacological interventions
- Pharmacological Management
 - Analgesics, nonsteroidal anti-inflammatory drugs, muscle relaxants, antidepressants and anticonvulsants)
- Non-Pharmacological Management
 - Physical therapy, stretching exercises, thermotherapy, ergonomic modifications
- Trigger point Injections (TPI): minimally invasive therapy using local anesthetics or anesthetics with corticosteroids

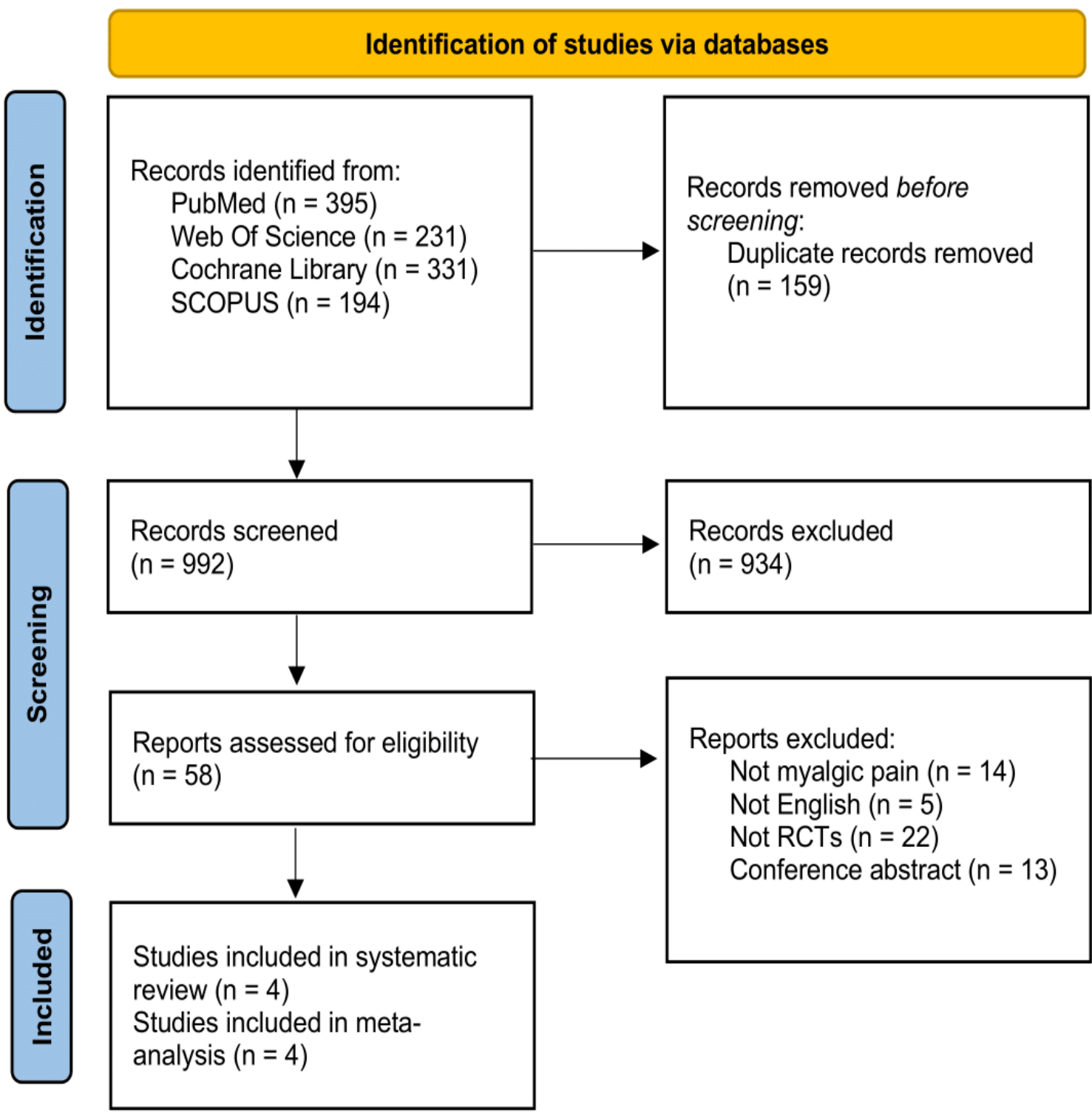
Objective

- The objective of our meta-analysis is to consolidate the available evidence and conduct a thorough assessment of the effectiveness and safety of trigger point injections compared to isolated medical management for treating acute myofascial pain.

Materials and Methods

- Conducted search following Cochrane Handbook and PRISMA standards [PubMed, Scopus, Web of Science, and Cochrane Library]
- Keywords included "trigger point injection," "nonsteroidal anti-inflammatory medications," "acute muscular pain," and "myofascial pain."
- Inclusion Criteria:
 - Randomized controlled trials (RCTs).
 - Comparing trigger point injections with medical management.
 - Involving adult participants aged 18 years or older.
 - Reporting outcomes related to pain intensity.
- Exclusion Criteria:
 - Focused on chronic myofascial pain, not acute cases.
 - Utilized interventions other than trigger point injections or medical management.
 - Lacked sufficient data for outcome assessment.
 - Non-English publications.

Date Search



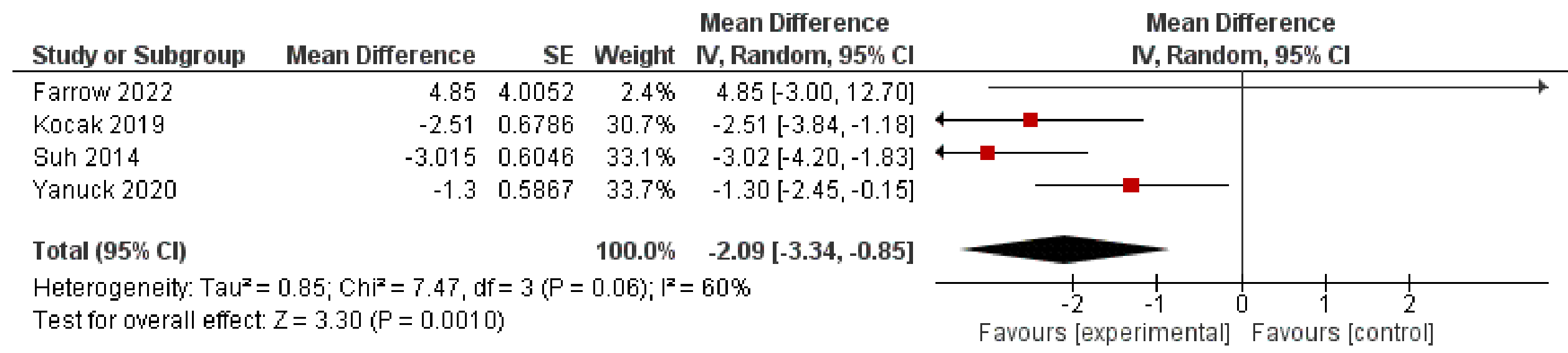
Randomized Control Trials

Study ID	Design	Country	Group	Number	Age	Sex (Male)	Inclusion Criteria	Exclusion Criteria	Main finding
Kocak et al., 2019	RCT	Turkey	NSAID	32	40.94 ± 13.18	17	☐ Age N 18 ☐ The patient should present to the emergency department with the complaint of LBP. ☐ LBP should have a recent time of onset (duration of LBP should not be over 48 h) ☐ At least one TP should be identified as the cause of the pain.	☐ LBP should not be associated with an organic cause. ☐ Chronic illnesses ☐ Fibromyalgia ☐ Lumbar radiculopathies, lumbar disc herniations, degenerative joint diseases ☐ Individuals being allergic to local anesthetics or dextetopofren. ☐ The individuals to whom trigger point injections were applied. ☐ Individuals with bleeding disorders ☐ Patients taking medications which increase the risk of bleeding. ☐ A history of surgery on the neck or shoulders ☐ Pregnant patients	TPI was superior to the intravenous NSAIDs in the treatment of acute LBP due to TPs.
			TPI	22	45.14 ± 13.03	14			
Yanuck et al., 2020	RCT	USA	TPI	33	40.2 ± 16.9	13	☐ Patients 18 years or older who were deemed to have myofascial pain of the neck or back.	☐ They had midline spinal tenderness. ☐ evidence of radiculopathy. ☐ received pain medication prior to enrollment in the study. ☐ pregnant ☐ allergy to lidocaine ☐ signs of infection ☐ skin breakdown over the trigger point.	TPI is an effective method for managing myofascial pain in the emergency department.
			Control	19	42.0 ± 15.9	7			
Farrow et al., 2022	RCT	USA	TPI	100	45.1 ± 20.3	55	☐ At least 18 years old ☐ Patients with neck or back pain due to MPS ☐ Written informed consent	☐ Pregnant ☐ signs of infection ☐ Allergy to bupivacaine.	Patients in the TPI group had greater pain reduction at the time of first reassessment and lower rates of rescue therapy use but at discharge there was no difference.
			Standard treatment	96	46.7 ± 20.5	54			
			NSAID + MR	56	45.8 ± 20.9	29			
Suh et al., 2014	RCT	Korea	TPI	11	57.5 ± 9.5	5	☐ Patients diagnosed with rotator cuff disease from a tendinosis to a partial-thickness tear of the supraspinatus based on sonographic examination or magnetic resonance arthrography. ☐ Proximal upper arm pain below the shoulder joint in the affected shoulder side ☐ Pain score measured by VAS greater than 5. ☐ No weakness on resisted testing of musculotendinous units of the rotator cuff ☐ No less than 20% reduction in proximal upper arm pain with subacromial injections of local anesthetics and steroids ☐ Diagnosis of MPS in the brachialis muscle.	☐ Presence of other obvious pathology for the rotator cuff pain ☐ MPS in muscles other than the brachialis muscle ☐ Neurologic shoulder/axillary pain if the patient had a history of posterior neck pain. ☐ Signs and symptoms of neuropathy in the affected upper limbs ☐ A history of other treatments for upper arm pain ☐ A history of subacromial injection and/or trigger point injection within 3 months ☐ Previous history of adverse effect of lidocaine or steroid ☐ Gastrointestinal discomfort with NSAIDs ☐ Presence of an unstable medical condition or a known uncontrolled systemic disease ☐ Any conditions or situations that might place the patient at significant risk during the study.	US-guided trigger point injection of the brachialis muscle is safe and effective for both diagnosis and treatment when the cause of pain is suspected to be originated from the muscle.
Abbreviations RCT, Randomized control trial; US, Ultrasound; TP, Trigger point; TPI, Trigger point injection; MTTPs, myofascial trigger points; UTM, upper trapezius muscle; MPS, Myofascial pain syndrome; LBP, Lower back pain; MR, Muscle relaxant; VAS, visual analog scale									

Results

- Data synthesis was performed utilizing RevMan 5.4
- Measuring the change in pain scores participants experienced in randomized control trials (RCTs) when trigger point injections (TPI) were compared to isolated medical management
- Effect calculated using the mean difference (MD) between the TPI group and the isolated medical management group, which was then extended to calculate the standardized mean difference (SMD)
- Negative SMD indicated reduced pain in TPI group
- Based on 4 RCTs, TPI significantly reduced pain scores compared to medical treatment (SMD = -2.09, 95% CI, (-3.34, -0.85), P = 0.001)
- First systematic review and meta-analysis on TPI vs. medical treatment for acute myofascial pain

Mean Difference



Conclusion

- The analysis demonstrated that TPI significantly reduces pain scores compared to medical treatment
- Findings support using TPI as an effective intervention to alleviate acute myofascial pain
- Well-designed studies with standardized dosing protocols and administration timelines are warranted to validate these findings, explore the impact of TPI on other relevant outcomes, and identify factors contributing to the observed heterogeneity