CLINICAL RESEARCH

e-ISSN 1643-3750
© Med Sci Monit, 2026; 32: e953682
DOI: 10.12659/MSM.953682

Received: 2026.04.06
Accepted: 2026.08.19
Available online: 2026.08.26
Published: 2026.11.01

Short-Term Pain Outcomes of Trigger Point Injection Versus Dry Needling for Acute Myofascial Low Back Pain in the Emergency Department: A Prospective Randomized Comparative Study

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCDEF 1 Emre Şengün
AEF 2 Sultan Tuna Akgöl Gür

1 Department of Emergency Medicine, Giresun Training and Research Hospital, Giresun, Türkiye
2 Department of Emergency Medicine, Faculty of Medicine, Atatürk University, Erzurum, Türkiye

Corresponding Author: Emre Şengün, Department of Emergency Medicine Giresun Training and Research Hospital, Giresun, Türkiye
Phone: +90 544 766 84 36, e-mail: emresengun2828@gmail.com

Financial support: None declared
Conflict of interest: None declared

Background: Acute myofascial low back pain prompts emergency department visits, where rapid pain relief matters. Trigger point injection and dry needling are used for myofascial trigger points, but comparative evidence in emergency care is limited. This study compared the short-term analgesic effectiveness of trigger point injection and dry needling in patients with acute myofascial low back pain presenting to the emergency department.

Material/Methods: This prospective, randomized, comparative study randomized 52 patients; 49 patients who completed at least 1 post-procedure pain assessment were included in the analysis. Pain was assessed using the Numeric Rating Scale (NRS) at baseline and 5, 15, 30, and 60 minutes after the procedure. The principal effectiveness outcome was the between-group difference in percentage pain reduction at 30 minutes. Intravenous fentanyl (1 µg/kg) was administered as rescue analgesia after the 60-minute assessment when required.

Results: Baseline NRS scores were similar between groups ($P = 0.191$). Percentage pain reduction at 30 minutes was greater after trigger point injection than after dry needling (86.85 ± 17.53% vs 32.98 ± 13.48%; mean difference, 53.86 percentage points; 95% confidence interval, 44.78-62.94; $P < 0.001$). Pain scores were lower and pain reduction was greater after trigger point injection at all post-procedure timepoints (all $P < 0.001$). Rescue analgesia was required in 0 of 26 patients after trigger point injection and 15 of 23 patients (65.2%) after dry needling ($P < 0.001$). No procedure-related adverse events were observed.

Conclusions: Trigger point injection was associated with greater short-term pain reduction and less frequent rescue analgesia than dry needling during the first hour of emergency department care. These preliminary findings require confirmation in larger studies.

Keywords: Back Pain • Dry Needling • Emergency Medicine • Myofascial Pain Syndromes • Trigger Points

Full-text PDF: https://www.medscimonit.com/abstract/index/idArt/953682

4927 2 2 14

Publisher's note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Introduction

Low back pain is one of the most common reasons for seeking medical care and has a high lifetime prevalence [1,2]. More than half of the general population is estimated to experience at least 1 episode of low back pain during their lifetime [1]. It is considered a significant public health problem, particularly in young and middle-aged adults, due to its impact on disability and loss of productivity [3,4].

A substantial proportion of patients presenting with low back pain in primary care are diagnosed with nonspecific low back pain, for which no specific underlying pathology can be identified [4]. Mechanical low back pain is the most common clinical subtype and is primarily related to dysfunction of muscles, fascia, ligaments, intervertebral discs, and adjacent spinal structures rather than serious underlying pathology [3,4]. Mechanical low back pain typically worsens with movement or loading, improves with rest, and is commonly related to dysfunction or overuse of muscles, fascia, tendons, ligaments, and other supporting spinal structures [3,4]. Consequently, treatment strategies are primarily directed toward symptom control, pain relief, and functional improvement.

Analgesic medications, physical therapy modalities, and interventional methods are commonly used in the treatment of acute mechanical and myofascial low back pain [4]. Among these interventional approaches, trigger point injection and dry needling target myofascial trigger points (TrPs) within the muscle and are increasingly used to provide pain relief and support functional recovery [5,6]. However, there is limited and conflicting data in the literature regarding the relative superiority of these methods in terms of efficacy and patient comfort [7,8].

Previous studies have evaluated trigger point injection and dry needling in different myofascial pain populations and clinical settings. Lajeunesse et al evaluated trigger point injection approaches in patients with myofascial low back pain but did not include a dry needling comparison group [7]. Navarro-Santana et al reported in a systematic review and meta-analysis that trigger point injection can provide greater short-term pain reduction than dry needling in cervical myofascial pain [8]. Studies involving craniofacial and mixed-site myofascial pain have generally reported comparable effectiveness among dry needling, lidocaine injection, and related interventional approaches [9,10]. Roldan et al found no significant difference between saline and active-drug trigger point injections, suggesting that the mechanical effect of needling can contribute substantially to analgesia [11]. However, most previous studies involved chronic pain, non-emergency settings, or anatomical regions other than the low back [6,8-10,12]. Therefore, evidence directly comparing trigger point injection and dry needling during the first hour of emergency department care for acute myofascial low back pain remains limited.

Myofascial trigger points are thought to arise from local ischemia, excessive acetylcholine release, sustained muscle fiber contraction, and peripheral nociceptor sensitization; both TrP injection and dry needling are believed to act on these mechanisms, providing the physiological rationale for their use [6,13].

We hypothesized that trigger point injection would provide greater short-term pain reduction than dry needling, as measured using the Numeric Rating Scale (NRS) at 30 minutes after the procedure. Additional outcomes included NRS scores, absolute pain reduction (ΔNRS), percentage pain reduction (%ΔNRS), rescue analgesic requirement, and procedure-related adverse events. Accordingly, the aim of this study was to compare the short-term analgesic effectiveness of trigger point injection and dry needling in patients with acute myofascial low back pain presenting to the emergency department.

Material and Methods

Study Design and Ethics Approval

The study protocol was approved by the Ethics Committee of Atatürk University Faculty of Medicine (Meeting No. 07, Decision No. 64, November 7, 2019). The study was conducted in accordance with the principles of the Declaration of Helsinki and Good Clinical Practice. Written informed consent was obtained from all participants before enrollment.

Before participation, all patients received written and verbal information regarding the purpose, procedures, and voluntary nature of the study. Participants were informed that they could withdraw at any time without any effect on their medical care and that their personal data would remain confidential.

This prospective, randomized, comparative study included patients who presented to the Emergency Department of Atatürk University Faculty of Medicine Research Hospital with acute myofascial low back pain. The study was not prospectively registered, and the absence of prospective registration is acknowledged as a methodological limitation.

Study Population and Patient Selection

Patients presenting to the emergency department with low back pain underwent a standardized history and physical examination. Patients who met the eligibility criteria and were diagnosed with acute myofascial low back pain on the basis of a structured trigger-point examination were considered for inclusion.

The study was conducted between November 1, 2019, and February 29, 2020, during which a total of 37 427 patients

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Table 1. Baseline demographic and clinical characteristics of patients treated with trigger point injection or dry needling.

	Group 1	Group 2	p Value / 95% CI
Age (years)	45.5 ± 12.4	39.3 ± 12.7	0.091 / -1.03 to 13.43*
Sex			
Male	14 (53.8)	11 (47.8)	0.670**
Female	12 (46.2)	12 (52.2)	
Systolic blood pressure (mm Hg)	120.0 ± 9.7	123.7 ± 19.5	0.416 / -12.83 to 5.44*
Diastolic blood pressure (mm Hg)	77.2 ± 9.4	75.2 ± 11.2	0.488 / -3.87 to 8.00*
Heart rate (beats/min)	78.3 ± 8.6	79.8 ± 11.0	0.592 / -7.16 to 4.13*
Respiratory rate (breaths/min)	15.4 ± 1.9	15.4 ± 2.3	0.984 / -1.21 to 1.19*
Body temperature (°C)	36.7 (36.5-36.9)	36.5 (36.5-36.7)	0.031#
Oxygen saturation (%)	97.0 (95.0-98.0)	96.0 (94.0-96.0)	0.030#
Physical activity level			
Physically active	20 (76.9)	18 (78.3)	0.911**
Heavy physical activity	6 (23.1)	5 (21.7)	
Injection site			
Latissimus dorsi	25 (96.2)	20 (87.0)	0.330##
Gluteal region	15 (57.7)	16 (69.6)	0.390**
Pain duration (hours)	4.0 (2.0-14.0)	48.0 (24.0-48.0)	< 0.001#
Presence of chronic disease	4 (15.4)	5 (21.7)	0.716##
Number of injections	8.69 ± 2.58	7.70 ± 2.01	0.143 / -0.34 to 2.34*

Group 1, trigger point injection; Group 2, dry needling; SD, standard deviation; mm Hg, millimeters of mercury; °C, degrees Celsius. Data are presented as mean ± SD, median (25th-75th percentile), or n (%), as appropriate. * Independent-samples t-test; ** Pearson chi-square test; # Mann–Whitney U test; ## Fisher exact test. Injection-site categories allowed multiple responses; percentages were calculated per group and may exceed 100%.

presented to the emergency department. Of these patients, 1121 were assessed for eligibility. Of the eligible patients, 349 declined to participate in the study. Additionally, 104 patients were excluded due to being under 18 years of age, 21 due to pregnancy, 7 due to inability to cooperate, 97 due to not speaking Turkish, 19 due to allergy or possible allergy history to the drugs used, 281 due to analgesic use within the last 6 hours, and 191 due to accompanying chronic diseases. After eligibility assessment, 52 patients were randomized. Three patients allocated to Group 2 withdrew consent before the first post-procedure assessment at 5 minutes. Therefore, the study was completed with a total of 49 patients.

Inclusion Criteria

The inclusion criteria were age 18 years or older, diagnosis of acute myofascial low back pain, ability to read and understand Turkish, no communication or cooperation issues that would hinder the procedure, and provide written informed consent.

Exclusion Criteria

The exclusion criteria were allergy or contraindication to the drugs used in the study, use of anticoagulants or drugs affecting platelet function, use of analgesics within the last 6 hours, intellectual disability or significant cognitive impairment causing a significant cooperation disorder, hearing impairment, presence of active, and unstable chronic disease that could affect pain perception or treatment response (eg, uncontrolled diabetes mellitus, active malignancy, chronic inflammatory conditions, or significant cardiopulmonary disease). Note: Patients with stable, well-controlled chronic diseases that did not meet the above criteria were not excluded; their presence in Groups 1 and 2 (n = 4 and n = 5, respectively) is reported in **Table 1** as a baseline characteristic.

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Diagnostic Assessment of Myofascial Low Back Pain

The diagnosis of acute myofascial low back pain was based on history and physical examination of the lumbar paraspinal and gluteal muscle regions. The examined muscles were assessed by palpation for active myofascial trigger points. An active trigger point was defined by the presence of a palpable taut band, a hypersensitive spot within the band, and reproduction or referral of the patient's characteristic pain during compression. Candidate trigger points were assessed by applying a standardized pressure of 2 kg/cm^2 with a handheld mechanical pressure algometer. Reproduction or intensification of the patient's typical pain and a behavioral "jump sign," such as withdrawal, facial grimacing, or a verbal response, supported the identification of an active trigger point. Pain intensity was quantified separately using the 0-10 NRS before and after the assigned procedure.

Randomization and Allocation

Patients were randomized into 2 groups using the permuted block randomization method with fixed block sizes of 4 to ensure numerical balance between groups. The randomization sequence was generated by a biostatistician not involved in patient care using a computer-based random number generator prior to study initiation. Allocation was concealed using sequentially numbered, sealed, opaque envelopes that were opened only at the time of enrollment by the treating physician. The nature of the interventions prevented blinding of the participants and the physician performing the procedure. Pain outcomes were assessed at prespecified timepoints using the same 0-10 NRS instructions in both groups.

Trigger Point Injection

Patients were placed in the prone position, and the skin overlying the identified trigger points was cleansed with povidone-iodine. Each trigger point was stabilized using the pincer palpation technique. A 27-gauge, 0.40 × 40-mm needle attached to a 2.5-mL syringe containing 2% lidocaine was inserted perpendicular to the skin and advanced into the trigger point. After negative aspiration to exclude intravascular placement, 0.1-0.2 mL of lidocaine was injected. The needle direction was then changed, and the same trigger point was probed several times in an attempt to elicit a local twitch response. The procedure was repeated for all identified trigger points. The number of needle insertions and the presence of a local twitch response were recorded. After the procedure, manual compression was applied to the treated sites for approximately 2 minutes to achieve hemostasis.

Dry Needling

Patients were placed in the prone position, and the skin overlying the identified trigger points was cleansed with povidone-iodine. Each trigger point was stabilized using the pincer palpation technique. Dry needling was performed using a sterile 27-gauge, 0.40 × 40-mm needle without administration of any medication. The needle was inserted perpendicular to the skin and advanced into the trigger point. It was then moved repeatedly in different directions from the same entry site in an attempt to elicit a local twitch response and mechanically stimulate the trigger point. The procedure was repeated for all identified trigger points. A new needle was used after approximately 4-5 needle insertions to maintain needle sharpness and patient comfort. The number of needle insertions and the presence of a local twitch response were recorded. After completion of the procedure, manual compression was applied to the treated sites for approximately 2 minutes to achieve hemostasis.

Rescue Analgesia Protocol

Rescue analgesia was administered only after completion of all scheduled pain assessments. Patients who had not achieved adequate analgesia at the 60-minute NRS assessment (NRS-60 ≥ 5 or patient request) received 1 μg/kg intravenous fentanyl if there were no contraindications. Because rescue fentanyl was administered exclusively after the final NRS measurement, all scheduled pain scores (NRS-5, NRS-15, NRS-30, and NRS-60) reflect the effect of the study intervention alone, with no contamination from rescue analgesia.

Data Collection and Outcome Assessment

Patients' age, sex, pain etiology, comorbidities, medications used, and post-procedure adverse effects and complications (eg, nausea, vomiting, dizziness, hypotension, bleeding, hematoma) were recorded. Vital signs (systolic and diastolic blood pressure, heart rate, respiratory rate, body temperature, and oxygen saturation) were measured at triage/initial nursing assessment using standard emergency department monitoring equipment (electronic sphygmomanometer and pulse oximetry). Body temperature was measured with a tympanic thermometer. Pain duration was defined as the number of hours from symptom onset to emergency department arrival as reported by the patient. Physical activity level was categorized as "physically active" (regular recreational exercise or non-sedentary occupation) or "heavy physical activity" (occupation or regular training involving vigorous physical effort), based on patient self-report. Injection site was recorded as all anatomical sites treated per patient (multiple-response); patients could have both latissimus dorsi and gluteal region sites treated, and percentages were calculated per group N. Number of injections was defined as the total number of needle entry points per patient across all treated trigger point sites.

Pain intensity was quantified using the Numeric Rating Scale (NRS), an 11-point patient-reported scale ranging from 0,

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

representing no pain, to 10, representing the worst imaginable pain. At each assessment, patients were asked to select the number that best represented the intensity of their current low back pain. The same scale and instructions were used at all assessment timepoints. The reported NRS value was recorded as the quantitative pain outcome.

Pain was evaluated both before and after treatment. The pre-treatment pain score was recorded at presentation before the assigned procedure (NRS-0), and post-treatment pain scores were recorded at 5, 15, 30, and 60 minutes after the procedure (NRS-5, NRS-15, NRS-30, and NRS-60, respectively). Absolute pain reduction at each timepoint was calculated as ΔNRS-x = NRS-0 - NRS-x, and percentage pain reduction was calculated as%ΔNRS-x = [(NRS-0 - NRS-x)/NRS-0] × 100.

The principal effectiveness outcome was the between-group difference in percentage pain reduction at 30 minutes (%ΔNRS-30). Additional effectiveness outcomes included the NRS score, absolute pain reduction, and percentage pain reduction at 5, 15, and 60 minutes. Rescue analgesic requirement and procedure-related adverse events were evaluated as additional clinical outcomes. Rescue analgesic requirement was recorded as a binary outcome, and adverse events were monitored from the procedure until emergency department discharge.

A 60-minute observation window was selected because it approximates the typical interval during which emergency physicians must decide on rescue analgesia and disposition for patients with acute myofascial low back pain, and because the analgesic effects of both lidocaine and the mechanical stimulation of needling are expected to be established within this timeframe. This protocol cannot exclude the possibility of delayed pain recurrence beyond 60 minutes, which is addressed further as a study limitation.

Discharge and Follow-up

Patients were informed that temporary pain may develop in the areas where the procedure was performed. Oral and topical treatments containing nonsteroidal anti-inflammatory drugs (NSAIDs) and thiocolchicoside were prescribed at discharge. Since the study aimed to evaluate short-term analgesic efficacy in emergency department settings, no long-term follow-up was conducted after discharge.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for macOS, Version 31.0 (IBM Corp., Armonk, NY, USA). The normality of continuous variables was assessed using the Shapiro–Wilk test. Normally distributed continuous variables were presented as mean ± standard deviation (SD), whereas non-normally distributed continuous variables were presented as median (25th-75th percentile). Categorical variables were presented as number and percentage [n (%)].

For comparisons between 2 groups, the independent samples t-test was used for continuous variables that followed a normal distribution, and the Mann–Whitney U test was used for continuous variables that did not follow a normal distribution. The Pearson chi-square test was used to compare categorical variables, and the Fisher exact test was used when the expected cell count was less than 5.

For intergroup differences, the mean difference and 95% confidence interval (95% CI) were reported for variables showing a normal distribution, and the *P* value was reported for variables not showing a normal distribution. In all statistical analyses, a 2-tailed $P < 0.05$ value was considered statistically significant.

The principal effectiveness comparison was the between-group difference in percentage pain reduction at 30 minutes (%ΔNRS-30). NRS scores and absolute and percentage pain reductions at the other assessment timepoints, rescue analgesic requirement, and adverse events were evaluated as additional outcomes. Each post-procedure timepoint was compared separately between the treatment groups. No adjustment for multiple comparisons was applied to the additional outcome analyses; therefore, these findings were interpreted as exploratory.

Of the 52 participants randomised, 3 allocated to Group 2 withdrew consent and left the emergency department before completing the first post-procedure NRS assessment (NRS-5); they provided no post-randomization efficacy data. The primary analysis population was therefore defined as the modified intention-to-treat (mITT) set, comprising the 49 participants (Group 1: n = 26; Group 2: n = 23) who completed at least 1 post-procedure NRS measurement. Because the 3 withdrawals occurred before any outcome data were collected, complete-case analysis is mathematically equivalent to the mITT approach for all reported endpoints, and no imputation was required.

Because a clinically important and statistically significant baseline imbalance in pain duration was observed between groups (Group 1 median 4.0 h vs Group 2 median 48.0 h; $P < 0.001$), a post hoc covariate-adjusted analysis was performed for the principal effectiveness outcome. An analysis of covariance (ANCOVA) model was fitted with%ΔNRS-30 as the dependent variable, treatment group as the fixed factor, and the natural logarithm of pain duration [ln(pain duration)] as a continuous covariate. The logarithmic transformation was applied because pain duration was highly right-skewed. The adjusted between-group mean difference, its 95% confidence interval, and the corresponding *P* value were extracted from the model. This analysis was designated as a post hoc robustness

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

check; the unadjusted between-group comparison remained the principal inferential analysis.

Because rescue fentanyl was administered only after completion of all scheduled NRS assessments, no NRS measurement was obtained in the presence of rescue analgesia; accordingly, post-rescue score contamination was not a concern. The target sample size was not based on a formal a priori sample size calculation. Recruitment was conducted pragmatically among eligible and consenting patients during the four-month study period; consequently, the modest sample size limits the precision and generalizability of the findings and the ability to assess uncommon adverse events.

Results

Participant Characteristics

Comparisons of the baseline demographic and clinical characteristics of the study groups are presented in **Table 1**. Statistically significant differences were found between the groups in terms of body temperature, oxygen saturation, and pain duration. Body temperature was 36.70 °C (36.50-36.90) in Group 1 and 36.50 °C (36.50-36.70) in Group 2 ($P = 0.031$). Oxygen saturation was 97.00% (95.00-98.00%) in Group 1 and 96.00% (94.00-96.00%) in Group 2 ($P = 0.030$). When evaluated in terms of pain duration, the median pain duration was 4.00 (2.00-14.00) hours in Group 1 and 48.00 (24.00-48.00) hours in Group 2 ($P < 0.001$).

No statistically significant differences were observed between the groups in terms of age, sex, systolic and diastolic blood pressure, pulse, respiratory rate, activity level, injection site, presence of chronic disease, and number of injections (all $P > 0.05$). These findings indicate that the groups were similar and comparable in terms of baseline characteristics for the aforementioned variables.

Pain Scores After the Procedures

Comparisons between groups in terms of pain levels and changes in pain are presented in **Table 2** and **Figure 1**. No statistically significant difference was found between groups in terms

Table 2. Pain scores, changes from baseline, and rescue analgesic requirement after trigger point injection or dry needling.

	Group 1	Group 2	P Value / 95% CI
NRS-0	8.00 (6.75-8.00)	8.00 (7.00-10.00)	0.191*
NRS-5	4.00 (3.00-5.25)	7.00 (6.00-7.00)	< 0.001*
NRS-15	2.00 (0.00-3.00)	5.00 (5.00-7.00)	< 0.001*
NRS-30	0.50 (0.00-2.00)	6.00 (5.00-6.00)	< 0.001*
NRS-60	0.00 (0.00-1.00)	6.00 (4.00-7.00)	< 0.001*
ΔNRS-5	4.00 (2.00-5.00)	2.00 (1.00-2.00)	< 0.001*
ΔNRS-15	6.00 (4.75-7.25)	3.00 (2.00-3.00)	< 0.001*
ΔNRS-30	6.50 (5.00-8.00)	3.00 (2.00-4.00)	< 0.001*
ΔNRS-60	7.00 (5.00-8.00)	3.00 (2.00-3.00)	< 0.001*
ΔNRS%-5	48.07 ± 20.31	22.21 ± 9.52	< 0.001 / 16.83 to 34.88**
ΔNRS%-15	76.30 ± 19.32	30.02 ± 9.94	< 0.001 / 37.69 to 54.85**
ΔNRS%-30	86.85 ± 17.53	32.98 ± 13.48	< 0.001 / 44.78 to 62.94**
ΔNRS%-60	91.03 ± 14.67	32.94 ± 11.18	< 0.001 / 50.50 to 65.65**
Rescue analgesic requirement	0 (0.00)	15 (65.2)	< 0.001#

Group 1, trigger point injection; Group 2, dry needling; NRS, Numeric Rating Scale; SD, standard deviation; CI, confidence interval; ΔNRS, absolute reduction in NRS score from baseline; ΔNRS%, percentage reduction in NRS score from baseline. Data are presented as median (25th–75th percentile), mean ± SD, or n (%), as appropriate. *Mann–Whitney U test; ** independent-samples t-test; # Pearson chi-square test. Percentage pain reduction was calculated as [(baseline NRS - post-procedure NRS)/baseline NRS] × 100. For normally distributed continuous variables, values following the slash indicate the 95% confidence interval for the between-group mean difference.

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

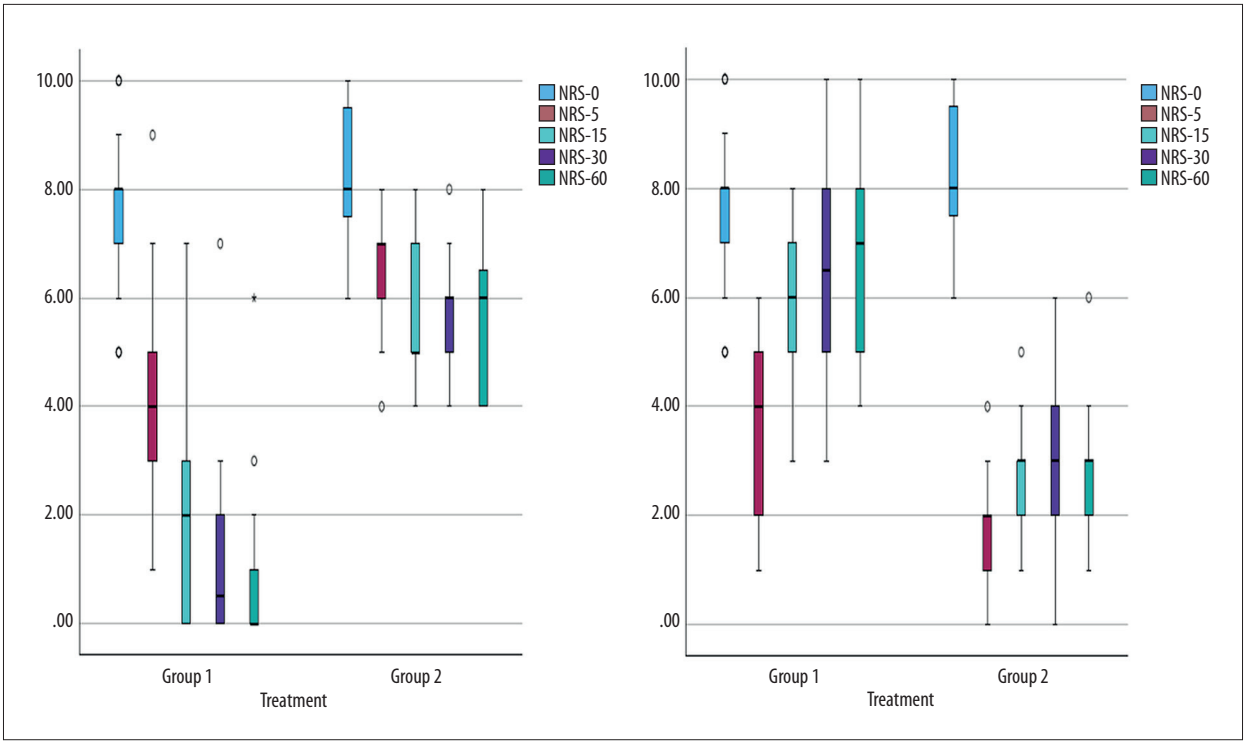
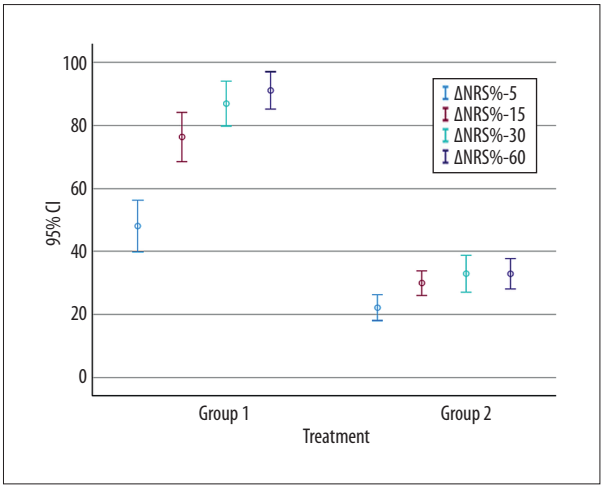


Figure 1. Numeric Rating Scale pain scores and absolute pain reduction after trigger point injection and dry needling. The left panel shows Numeric Rating Scale (NRS) pain scores at baseline (NRS-0) and at 5, 15, 30, and 60 minutes after the procedure in Group 1 (trigger point injection) and Group 2 (dry needling). The right panel shows the corresponding absolute reductions from baseline (ΔNRS-5, ΔNRS-15, ΔNRS-30, and ΔNRS-60). Boxes represent the interquartile range, horizontal lines within the boxes represent the median, whiskers represent the non-outlier range, and individual circles indicate outliers. ΔNRS was calculated as baseline NRS minus the NRS value at the corresponding post-procedure timepoint.



of pain scores at the time of application (NRS-0) ($P = 0.191$). However, pain scores measured at 5, 15, 30, and 60 minutes (NRS-5, NRS-15, NRS-30, and NRS-60) were significantly lower in Group 1 compared to Group 2 ($P < 0.001$ for all comparisons).

Figure 2. Percentage reduction in Numeric Rating Scale pain scores after trigger point injection and dry needling. The figure shows the mean percentage reduction from baseline in Numeric Rating Scale (NRS) pain scores at 5, 15, 30, and 60 minutes after the procedure in Group 1 (trigger point injection) and Group 2 (dry needling). Error bars represent 95% confidence intervals. Percentage pain reduction was calculated as [(baseline NRS - post-procedure NRS)/baseline NRS] × 100. CI, confidence interval; ΔNRS%, percentage reduction in Numeric Rating Scale pain score.

Absolute and Percentage Pain Reduction

Absolute pain reduction values calculated relative to baseline (ΔNRS-5, ΔNRS-15, ΔNRS-30, and ΔNRS-60) were significantly higher in Group 1 than in Group 2 ($P < 0.001$ for all comparisons). Similarly, the ΔNRS%-5, ΔNRS%-15, ΔNRS%-30, and ΔNRS%-60 values, which express pain reduction as a percentage, were also significantly higher in Group 1 and are presented in **Figure 2** ($P < 0.001$ for all comparisons).

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Covariate-Adjusted Analysis

Baseline pain duration was included as a covariate in a post hoc analysis of covariance (ANCOVA) to assess its potential influence on the principal effectiveness outcome (%ΔNRS-30). After adjustment, the treatment effect remained statistically significant ($F = 55.815$, $P < 0.001$), with Group 1 demonstrating a 47.1 percentage point greater reduction compared to Group 2. Pain duration was not a significant independent predictor ({b = -3.83; 95% CI: -8.90 to 1.24; $P = 0.135$). These findings indicate that baseline imbalance in pain duration did not materially influence the treatment effect.

Rescue Analgesic Requirement

No rescue analgesic was required by any participant in Group 1. In Group 2, 15 of 23 participants (65.2%) required intravenous fentanyl (1 μg/kg) administered after the 60-minute NRS assessment based on inadequate analgesia criteria (NRS-60 ≥5 or patient request); this difference was highly significant ($P < 0.001$). Because rescue fentanyl was administered exclusively after completion of all scheduled pain assessments, all NRS measurements (NRS-5, NRS-15, NRS-30, and NRS-60) represent the effect of the study intervention alone and are unaffected by rescue analgesia. The principal effectiveness outcome (%ΔNRS-30) was therefore not confounded by rescue medication.

Adverse Events

No procedure-related adverse events were observed in either group during the emergency department stay (ascertainment window: procedure through emergency department discharge). Specifically, nausea, vomiting, dizziness, hypotension, bleeding, and hematoma were each recorded in 0 of 26 (0.0%) patients in Group 1 and 0 of 23 (0.0%) patients in Group 2.

Discussion

The principal finding of this study was that trigger point injection was associated with greater short-term pain reduction than dry needling in patients presenting to the emergency department with acute myofascial low back pain. Pain scores were lower after trigger point injection at all post-procedure assessment timepoints, and the difference in percentage pain reduction at 30 minutes remained statistically significant after adjustment for baseline pain duration. In addition, rescue analgesia was required less frequently after trigger point injection, and no procedure-related adverse events were observed in either group during the emergency department stay. These findings should be interpreted cautiously because of the modest sample size, open-label design, baseline imbalance in pain duration, and short follow-up period.

The use of local anesthetics in TrP injection provides analgesia through both the mechanical needling effect and the temporary blockage of local nerve transmission [5]. Local anesthetics such as lidocaine have been shown to suppress intramuscular nociceptor activity and reduce central sensitization [5,6]. In contrast, the dry needling method aims to create a local twitch response using only mechanical stimulation without the use of any pharmacological agents. This mechanical stimulation is thought to increase intramuscular circulation, facilitate the removal of metabolic waste, and reduce abnormal motor endplate activity that causes pain [6].

Although studies in the literature indicate that both methods are effective in the treatment of myofascial pain, there is no clear consensus on the superiority of one method over the other. Some studies report that TrP injection provides faster and more pronounced analgesia, while others indicate that dry needling has similar efficacy and offers the advantage of avoiding side effects associated with drug use. A 2022 systematic review and meta-analysis suggested that trigger point injection can provide greater short-term pain relief than dry needling for cervical myofascial pain, although the available evidence was limited and heterogeneous [8].

In a randomised comparative study conducted in an emergency department, Roldan et al found no statistically significant difference in pain reduction between trigger point injection with a conventional active drug mixture and injection with normal saline alone, suggesting that the mechanical needling effect contributes substantially to analgesia independently of the injectate. These findings underscore the need for further controlled studies to clarify the relative contributions of pharmacological and mechanical mechanisms in trigger point-based interventions [11].

In a study conducted by Taşkesen et al in 2023 comparing masseteric nerve block, trigger point injection, and dry needling for myofascial pain, all 3 treatment approaches were reported to provide clinical improvement, with no clear superiority among the interventions [9]. In a study comparing kinesio taping, dry needling, and lidocaine injection in myofascial pain syndrome, Kara et al also reported these 3 methods had similar efficacy in terms of analgesic effectiveness and clinical outcomes [10]. Hong reported that post-procedure soreness was more intense and prolonged after dry needling than after lidocaine injection [13].

The more pronounced analgesic relief observed in the TrP injection group is consistent with previous reports suggesting that lidocaine-containing trigger point injection provides greater early analgesia than dry needling, although the relative contributions of pharmacological and mechanical mechanisms cannot be determined from the present study [8,13].

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

The heterogeneity of patient populations, anatomical pain locations, procedural techniques, and outcome assessment timepoints likely contributes to the inconsistency of findings across studies.

In the emergency department, procedural brevity, minimal equipment, and low risk of serious complications are key determinants of treatment selection [7]. Dry needling avoids medication-related adverse effects, which may be advantageous in selected patients [6,14]. However, TrP injection may be preferred when rapid and pronounced analgesia is required, particularly in patients presenting with severe pain [7,8].

When evaluated in terms of adverse effect profile, a prospective study reported that minor adverse effects (such as bleeding, bruising, and pain) were common after dry needling, but serious complications were rare [14]. Complications of TrP injections include pain, bleeding, infection, allergic reaction to the anesthetic agent, systemic toxicity, hematoma, and, very rarely, serious risks such as pneumothorax [5]. The present finding of no adverse effects supports the literature.

In this study, the assessment of pain levels at different time points allowed for a comparison of the time-dependent analgesic effects of both methods. Emergency department length of stay was not systematically recorded in this study, and we therefore make no claim regarding the effect of either intervention on this outcome.

The superiority of TrP injection persisted after covariate adjustment for baseline pain duration (adjusted mean difference 47.1 percentage points [95% CI: 41.8-60.6]; $P < 0.001$), lending methodological credibility to the primary result. The minimal attenuation of the effect estimate after adjustment (53.9 vs 47.1 percentage points) suggests that the observed early analgesic benefit was unlikely to be explained solely by the shorter baseline pain duration in Group 1. However, because no placebo or normal-saline injection control group was included, the relative contributions of the pharmacological effects of lidocaine and the mechanical effects of needling cannot be determined from the present study. If the pharmacological component contributed substantially, this would be consistent with the established capacity of local anesthetics to suppress nociceptor sensitization and disrupt the self-sustaining acetylcholine release cycle at the motor endplate—mechanisms that are largely independent of pain chronicity over the acute timeframe studied [6,13]. Because rescue fentanyl was administered only after the final (60-minute) NRS assessment, all scheduled pain scores reflect the isolated effect of the assigned intervention, strengthening internal validity. This magnitude of effect nonetheless warrants cautious interpretation. First, the open-label design may have influenced patient-reported pain scores and the clinician-driven timing of rescue analgesia, despite the use of standardized verbal assessment scripts. Second, although the shorter baseline pain duration in Group 1 was not an independent predictor in the adjusted model, a contribution from this imbalance cannot be entirely excluded. Third, because this study did not include a placebo or normal-saline injection control arm, the relative contributions of the pharmacological (lidocaine) and mechanical (needling) components of TrP injection cannot be disentangled here; prior work comparing saline and active-drug trigger point injections has suggested that the mechanical effect of needling itself may account for a substantial part of the observed analgesia [11]. These findings suggest that TrP injection with lidocaine was associated with a lower requirement for rescue opioid analgesia in this study. Future studies in this population should incorporate a prospective, a priori sample size and power calculation; adequately powered multicenter studies that also incorporate a placebo/saline control arm, prospective covariate adjustment, and objective functional outcomes are needed to confirm these findings.

This study has several methodological limitations that should be considered when interpreting the findings. First, this was a single-center study with a modest sample size and no formal a priori sample size calculation. Although statistically significant differences were observed, the limited sample size reduces the precision and generalizability of the effect estimates, prevents meaningful subgroup analyses, and limits the detection of uncommon adverse events. Therefore, the findings should be regarded as preliminary until confirmed in larger multicenter studies. Second, the nature of the interventions precluded blinding of patients or practitioners; to mitigate ascertainment bias, NRS assessments were elicited using standardized verbal scripts at each timepoint. Third, and most critically, despite permuted block randomization, a large baseline imbalance in pain duration arose by chance (Group 1 median 4.0 h vs Group 2 median 48.0 h; $P < 0.001$). This imbalance was not prespecified for adjustment; however, a post hoc ANCOVA adjusting for ln(pain duration) yielded an adjusted mean difference of 47.1 percentage points (95% CI: 41.8-60.6; $P < 0.001$), only marginally smaller than the unadjusted estimate of 53.9 percentage points. Pain duration was not an independent predictor of%ΔNRS-30 in the model ($P = 0.135$), suggesting that patients with longer-standing pain did not systematically respond differently to either intervention within the acute emergency department timeframe studied. Accordingly, confounding by pain duration is unlikely to account for the magnitude of the observed treatment difference, and the comparative effectiveness conclusions are supported by both the adjusted and unadjusted analyses. Stratified randomization by baseline pain duration was not incorporated at the design stage, as this imbalance was not anticipated; future trials in this population should consider stratifying allocation by pain duration or other variables associated with treatment response.

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

Fourth, the high rescue analgesic requirement in the dry needling group (65.2%) reflects insufficient analgesic response in a substantial proportion of patients treated with dry needling under the present study protocol but did not introduce measurement bias, as rescue fentanyl was administered exclusively after all scheduled NRS assessments were completed. The brief in-department observation period also limited the assessment of delayed pain recurrence and delayed adverse events; therefore, no conclusions can be drawn regarding comparative safety beyond the acute emergency department encounter. This study was also not prospectively registered, which is acknowledged as a further methodological limitation. Finally, the absence of long-term follow-up limits inferences regarding pain recurrence and functional recovery. Nevertheless, the prospective randomized design, standardized intervention procedures, and predefined pain-assessment timepoints are strengths of the study.

Conclusions

Trigger point injection was associated with greater short-term pain reduction and a lower requirement for rescue analgesia than dry needling during the first hour of emergency department care. Because this was a small, single-center study without long-term follow-up, the findings should be considered preliminary and require confirmation in larger multicenter studies.

Acknowledgements

The authors would like to thank the emergency department staff for their support during patient recruitment and data collection.

Data Availability Statement

The data supporting the findings of this study are not publicly available due to ethical restrictions and patient confidentiality but are available from the corresponding author upon reasonable request.

Declaration of Artificial Intelligence Use

During revision, the authors used ChatGPT (OpenAI) to assist with English-language editing, organization, and drafting of revised text and responses to reviewers. The tool was not used to generate or analyze study data. All AI-assisted content, statistical interpretations, references, and conclusions were independently reviewed and approved by the authors, who take full responsibility for the final manuscript.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

References:

1. World Health Organization. Low back pain [Internet]. Geneva: World Health Organization; 2023 Jun 19 [cited 2026 Mar 16]. Available from: https://www.who.int/news-room/fact-sheets/detail/low-back-pain
2. Shokri P, Zahmatyar M, Falah Tafti M, et al. Non-spinal low back pain: Global epidemiology, trends, and risk factors. Health Sci Rep. 2023;6(9):e1533
3. Duarte ST, Moniz A, Costa D, et al. Low back pain management in primary healthcare: Findings from a scoping review on models of care. BMJ Open. 2024;14(5):e079276
4. Krenn C, Horvath K, Jeitler K, et al. Management of non-specific low back pain in primary care – A systematic overview of recommendations from international evidence-based guidelines. Prim Health Care Res Dev. 2020;21:e64
5. Hammi C, Schroeder JD, Yeung B. Trigger point injection. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026. Updated Jul 24, 2023. Available from: https://www.ncbi.nlm.nih.gov/books/NBK542196/
6. Fernandez-de-Las-Penas C, Nijs J. Trigger point dry needling for the treatment of myofascial pain syndrome: Current perspectives within a pain neuroscience paradigm. J Pain Res. 2019;12:1899-911
7. Lajeunesse MD, Olivera TR, April MD, et al. Trigger point injection for myofascial pain syndrome of the low back: A partially blinded three-arm randomized controlled trial. Ann Emerg Med. 2025;86(6):606-15
8. Navarro-Santana MJ, Sanchez-Infante J, Gomez-Chiguano GF, et al. Dry needling versus trigger point injection for neck pain symptoms associated with myofascial trigger points: A systematic review and meta-analysis. Pain Med. 2022;23(3):515-25
9. Taskesen F, Cezairli B. The effectiveness of the masseteric nerve block compared with trigger point injections and dry needling in myofascial pain. Cranio. 2023;41(2):96-101
10. Kara S, Solum S, Saglam E, Oke D. Comparison of kinesio taping, dry needling and lidocaine injection methods in myofascial pain syndrome. J Bodyw Mov Ther. 2024;38:128-32
11. Roldan CJ, Osuagwu U, Cardenas-Turanzas M, Huh BK. Normal saline trigger point injections vs conventional active drug mix for myofascial pain syndromes. Am J Emerg Med. 2020;38(2):311-16
12. Lluch E, Nijs J, De Kooning M, et al. Prevalence, incidence, localization, and pathophysiology of myofascial trigger points in patients with spinal pain: A systematic literature review. J Manipulative Physiol Ther. 2015; 38(8):587-600
13. Hong CZ. Lidocaine injection versus dry needling to myofascial trigger point. The importance of the local twitch response. Am J Phys Med Rehabil. 1994;73(4):256-63
14. Boyce D, Wempe H, Campbell C, et al. Adverse events associated with therapeutic dry needling. Int J Sports Phys Ther. 2020;15(1):103-13

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS]

JCR Year 2025

Favorite Export

MEDICAL SCIENCE MONITOR

ISSN
N/A

EISSN
1643-3750

JCR ABBREVIATION
MED SCI MONITOR

ISO ABBREVIATION
Med. Sci. Monitor

Journal information

EDITION
Science Citation Index Expanded (SCIE)

CATEGORY
MEDICINE, RESEARCH & EXPERIMENTAL

LANGUAGES
English

REGION
USA

1ST ELECTRONIC JCR YEAR
2006

Publisher information

PUBLISHER
INT SCIENTIFIC INFORMATION, INC

ADDRESS
150 BROADHOLLOW RD, STE 114, MELVILLE, NY 11747

PUBLICATION FREQUENCY
1 issue/year

Journal's performance

Journal Impact Factor

The Journal Impact Factor (JIF) is a journal-level metric calculated from data indexed in the Web of Science Core Collection. It should be used with careful attention to the many factors that influence citation rates, such as the volume of publication and citations characteristics of the subject area and type of journal. The Journal Impact Factor can complement expert opinion and informed peer review. In the case of academic evaluation for tenure, it is inappropriate to use a journal-level metric as a proxy measure for individual researchers, institutions, or articles. Learn more

2025 JOURNAL IMPACT FACTOR
2.5

View calculation

JOURNAL IMPACT FACTOR WITHOUT SELF CITATIONS
2.4

View calculation

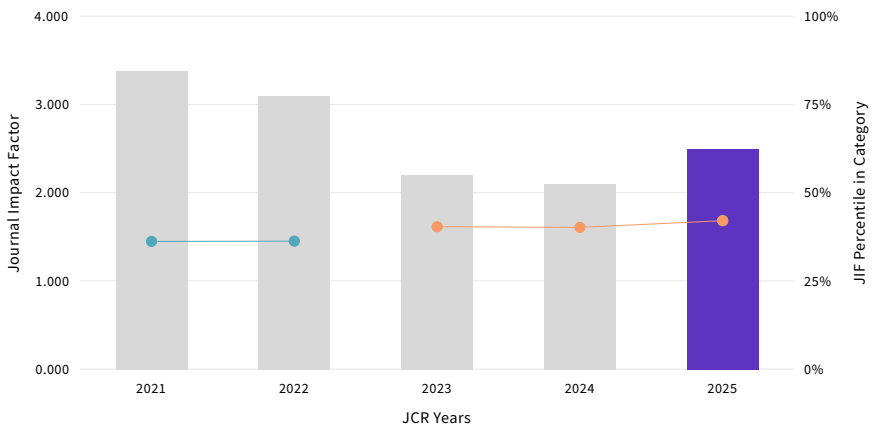
Journal Impact Factor Trend 2025 Export

Journal Impact Factor contributing items Export

Citable items (752) | Citing Sources (936)

TITLE	CITATION COUNT
A Review of the Resurgence of Measles, a Vaccine-Preventable Disease, as…	25

18



View all years

Journal Citation Indicator (JCI)

Export

0.45

Journal Citation Reports

A Review of IgA Vasculitis (Henoch-Schönlein Purpura) Past, Present, an…	20
A Review of the Current Status of DiseaseModifying Therapies and…	18
Comparison of Remimazolam and Propofol on Postoperative Delirium i…	17
From Liver to Brain: How MAFLD/MASLD Impacts Cognitive…	17
Epidemiology, Pathophysiology, Diagnosis, and Principles of…	16
Applications of Functional Near-Infrared Spectroscopy (fNIRS)…	14
Autism Spectrum Disorders: Etiology, Epidemiology, and Challenges for…	14
Impact of Smoking on Salivary Lipid Profile and Oxidative Stress in Young…	13
Awareness and Perceptions of ChatGPT Among Academics and Research…	12

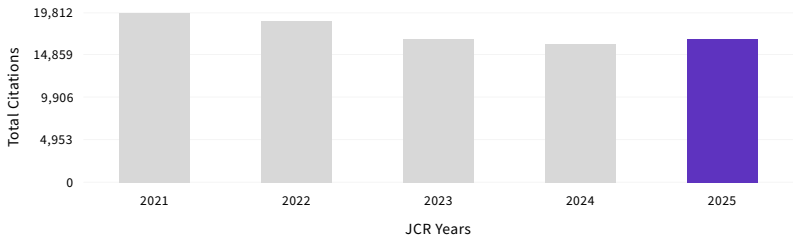
View All in Web of Science

Total Citations

Export

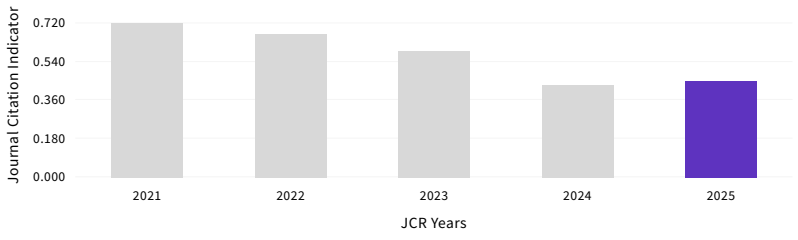
16,764

The total number of times that a journal has been cited by all journals included in the database in the JCR year. Citations to journals listed in JCR are compiled annually from the JCR years combined database, regardless of which JCR edition lists the journal.



View all years

The Journal Citation Indicator (JCI) is the average Category Normalized Citation Impact (CNCI) of citable items (articles & reviews) published by a journal over a recent three year period. The average JCI in a category is 1. Journals with a JCI of 1.5 have 50% more citation impact than the average in that category. It may be used alongside other metrics to help you evaluate journals. Learn more



View all years

Citation distribution

Export

The Citation Distribution shows the frequency with which items published in the year or two years prior were cited in the JCR data year (i.e., the component of the calculation of the JIF). The graph has similar functionality as the JIF Trend graph, including hover-over data descriptions for each data point, and an interactive legend where each data element's legend can be used as a toggle. You can view Articles, Reviews, or Non-Citable (other) items to the JIF numerator. Learn more

ARTICLE CITATION MEDIAN

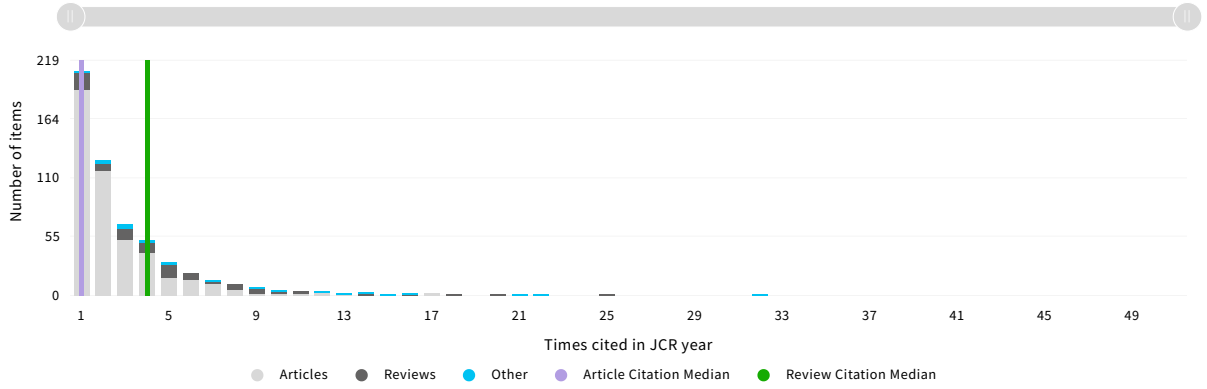
1

REVIEW CITATION MEDIAN

4

UNLINKED CITATIONS

56



TIMES CITED

0

ARTICLES

194

REVIEWS

12

OTHER

34

Open Access (OA)

Export

The data included in this tile summarizes the items published in the journal in the JCR data year and in the previous two years. This three-year set of published items is used to provide descriptive analysis of the content and community of the journal. Learn more

Items

TOTAL CITABLE % OF CITABLE OA

Citations*

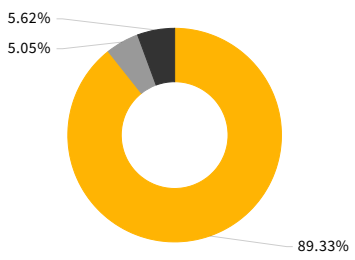
TOTAL CITABLE % OF CITABLE OA

1,141 94.65%

CITABLE

GOLD OPEN ACCESS
1,080 / 89.33%

SUBSCRIPTION AND FREE TO READ
61 / 5.05%



NON-CITABLE

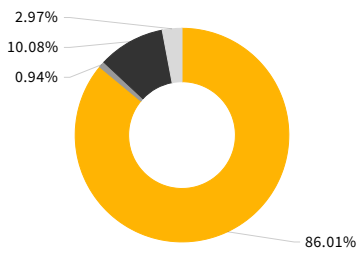
OTHER (NON CITABLE ITEMS)
68 / 5.62%

1,846 98.92%

CITABLE

GOLD OPEN ACCESS
1,826 / 86.01%

SUBSCRIPTION AND FREE TO READ
20 / 0.94%



NON-CITABLE

OTHER (NON CITABLE ITEMS)
214 / 10.08%

UNLINKED CITATIONS
63 / 2.97%

*Citations in 2025 to items published in [2023 - 2025]

Rank by Journal Impact Factor

Journals within a category are sorted in descending order by Journal Impact Factor (JIF) resulting in the Category Ranking below. A separate rank is shown for each category in which the journal is listed in JCR. Beginning in 2023, ranks are calculated by category. Learn more

CATEGORY

MEDICINE, RESEARCH & EXPERIMENTAL

112/193

JCR YEAR	JIF RANK	JIF QUARTILE	JIF PERCENTILE
2025	112/193	Q3	42.2
2024	117/195	Q3	40.3
2023	113/189	Q3	40.5

Rank by JIF before 2023 for MEDICINE, RESEARCH & EXPERIMENTAL

EDITION

Science Citation Index Expanded (SCIE)

JCR YEAR	JIF RANK	JIF QUARTILE	JIF PERCENTILE
2009	60/93	Q3	36.02
2008	56/83	Q3	33.13
2007	48/81	Q3	41.36

Rank by Journal Citation Indicator (JCI)

Journals within a category are sorted in descending order by Journal Citation Indicator (JCI) resulting in the Category Ranking below. A separate rank is shown for each category in which the journal is listed in JCR. Data for the most recent year is presented at the top of the list, with other years shown in reverse chronological order. Learn more

CATEGORY

MEDICINE, RESEARCH & EXPERIMENTAL

127/193

JCR YEAR	JCI RANK	JCI QUARTILE	JCI PERCENTILE
2025	127/193	Q3	34.46
2024	138/195	Q3	29.49
2023	103/189	Q3	45.77
2022	87/190	Q2	54.47
2021	88/195	Q2	55.13
2020	93/188	Q2	50.80
2019	90/187	Q2	52.14

Citation network

Cited Half-life

Citing Half-life

6.7 years

The Cited Half-Life is the median age of the items in this journal that were cited in the JCR year. Half of a journal's cited items were published more recently than the cited half-life.

TOTAL NUMBER OF CITES

16,764

NON SELF-CITATIONS

16,580

SELF-CITATIONS

184

6.2 years

The Citing Half-Life is the median age of items in other publications cited by this journal in the JCR year.

TOTAL NUMBER OF CITES

16,686

NON SELF-CITATIONS

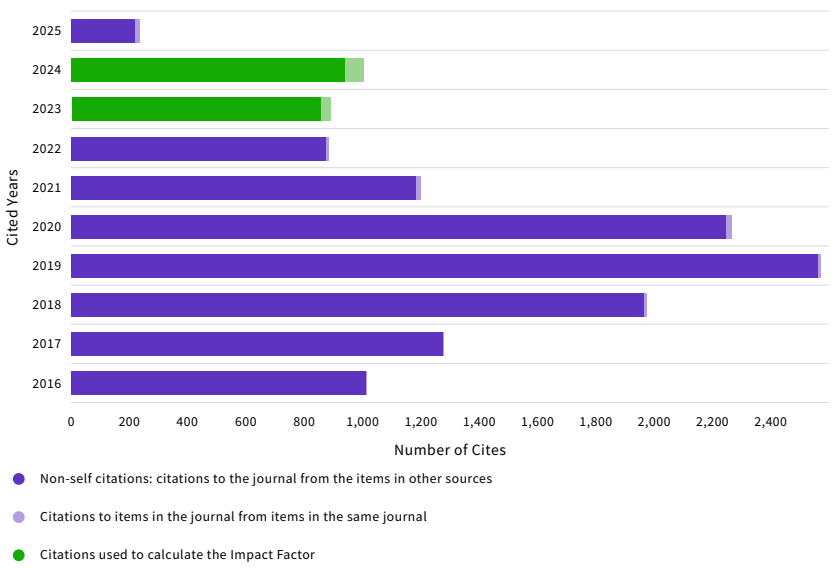
16,502

SELF-CITATIONS

184

Cited Half-life Data | **Citing Half-life Data**

Export

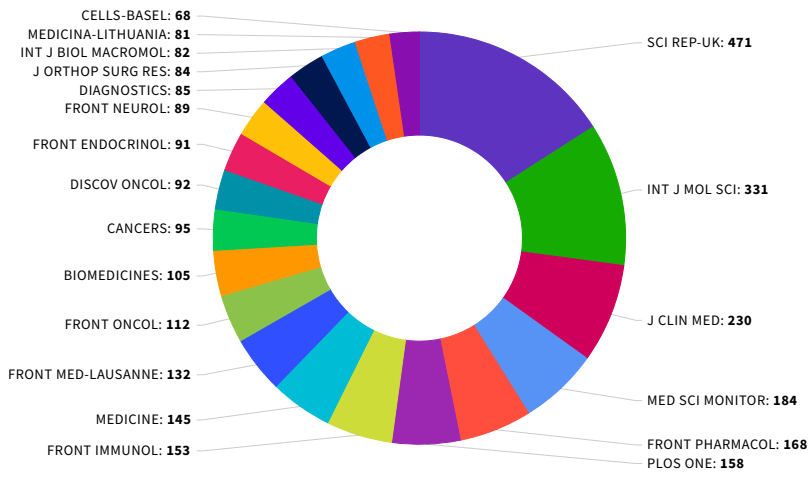


CITED YEAR	# OF CITES FROM 2025	CUMULATIVE %	# OF CITING SOURCES
All years	**16,764 citations**	**100.00%**	**4,057 sources**
2025	232 citations	1.38%	144 sources
2024	1,001 citations	7.36%	566 sources
2023	890 citations	12.66%	529 sources
2022	884 citations	17.94%	572 sources
2021	1,198 citations	25.08%	746 sources
2020	2,264 citations	38.59%	1,128 sources
2019	2,569 citations	53.91%	1,246 sources
2018	1,975 citations	65.69%	1,017 sources
2017	1,276 citations	73.31%	792 sources
2016	1,012 citations	79.34%	690 sources
Older	3,463 citations		

Journal Citation Relationships

Cited Data | **Citing Data**

Top 20 journals citing MED SCI MONITOR by number of citations



Content metrics

Source data

This tile shows the breakdown of document types published by the journal. Citable Items are Articles and Reviews. For the purposes of calculating JIF, a JCR year considers the publications of that journal in the two prior years. Learn more

389 total citable items

	ARTICLES	REVIEWS	COMBINED(C)	OTHER DOCUMENT TYPES(O)	PERCE
NUMBER IN JCR YEAR 2025 (A)	340	49	389	13	97%
NUMBER OF REFERENCES (B)	12,383	4,117	16,500	186	99%
RATIO (B/A)	36.4	84.0	42.4	14.3	

Average JIF Percentile

Export

The Average Journal Impact Factor Percentile takes the sum of the JIF Percentile rank for each category under consideration, then calculates the average of those values. Learn more

ALL CATEGORIES AVERAGE	MEDICINE, RESEARCH & EXPERIMENTAL
42.2	42.2

Contributions by organizations

Export

Contributions by country/region

Export

Organizations that have contributed the most papers to the journal in the most recent three-year period. Learn more

RANK	ORGANIZATION	COUNT
1	KING KHALID UNIVERSITY	51
2	JAZAN UNIVERSITY	49
3	MEDICAL UNIVERSITY OF LUBLIN	47
4	INT SCI INFORMAT INC	45
5	MEDICAL UNIVERSITY OF WARSAW	42
6	UNIVERSITY OF HEALTH SCIENCES TURKEY	34

Countries or Regions that have contributed the most papers to the journal in the most recent three-year period. Learn more

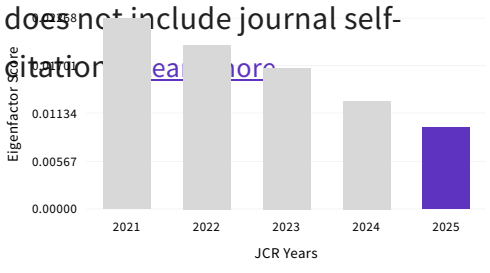
RANK	COUNTRY / REGION	COUNT
1	CHINA MAINLAND	487
2	POLAND	239
3	TURKIYE	176
4	SAUDI ARABIA	93
5	USA	73
6	SOUTH KOREA	40
7	TAIWAN	28
8	INDONESIA	23
9	GERMANY (FED REP GER)	19

Additional metrics

Eigenfactor Score

0.00974

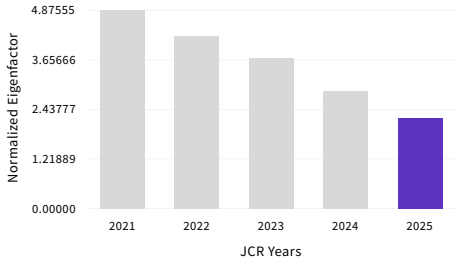
The Eigenfactor Score is a reflection of the density of the network of citations around the journal using 5 years of cited content as cited by the Current Year. It considers both the number of citations and the source of those citations, so that highly cited sources will influence the network more than less cited sources. The Eigenfactor calculation does not include journal self-citation. Learn more



Normalized Eigenfactor

2.21638

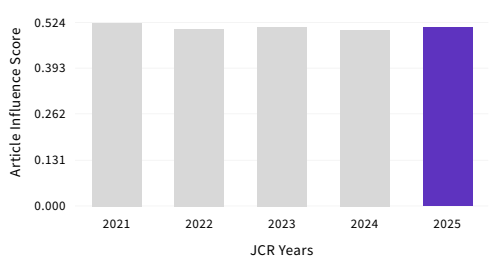
The Normalized Eigenfactor Score is the Eigenfactor score normalized, by rescaling the total number of journals in the JCR each year, so that the average journal has a score of 1. Journals can then be compared and influence measured by their score relative to 1. Learn more



Article influence score

0.510

The Article Influence Score normalizes the Eigenfactor Score according to the cumulative size of the cited journal across the prior five years. The mean Article Influence Score for each article is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. Learn more

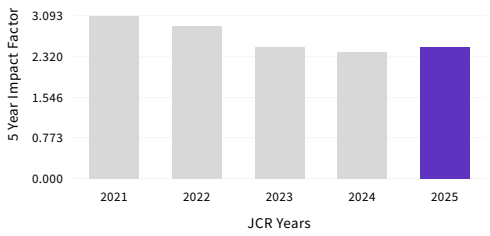


5 Year Impact Factor

2.5

View Calculation

The 5-year Impact Factor is the average number of times articles from the journal published in the past five years have been cited in the JCR year. It is calculated by dividing the number of citations in the JCR year by the total number of articles published in the five previous years. Learn more

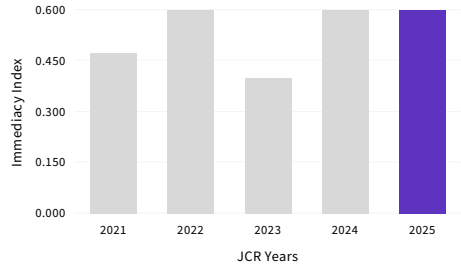


Immediacy Index

0.6

View Calculation

The Immediacy Index is the count of citations in the current year to the journal that reference content in this same year. Journals that have a consistently high Immediacy Index attract citations rapidly. Learn more



© 2026 Clarivate

Legal center
Privacy notice
Cookie policy
Terms of Use
Tanımlama Bilgisi Ayarları
Copyright notice
Accessibility
Help