pagepress

Confinia Cephalalgica 2024; 34:15777

Manual trigger point treatment in migraine management: a scope review

Roberto Tedeschi

Department of Biomedical and Neuromotor Sciences, Alma Mater Studiorum, University of Bologna, Italy

ABSTRACT

Background: Migraine is a debilitating neurological disorder that significantly impacts the quality of life of millions worldwide. Traditional pharmacological treatments sometimes fall short due to side effects and inconsistent efficacy, prompting a surge of interest in complementary therapies. Among these, manual trigger point therapy emerges as a promising approach.

Methods: This comprehensive scoping review analyzes data from five studies with Pedro scores ranging from 4/11 to 7/11 and RoB 2, each assessing the impact of manual trigger point therapy on migraine management.

Results: The review reveals that manual trigger point therapy may reduce the frequency and severity of migraine, enhancing overall patient well-being. Some studies suggest that trigger point therapy alone may suffice as an effective standalone treatment. Notably, this therapeutic approach increases effectiveness of concomitant conventional treatments, offering a potential breakthrough in holistic migraine care.

Conclusions: While present evidence supports the integration of manual trigger point therapy into migraine management protocols, the varying quality of the studies highlights an urgent need for additional investigation with standardized methodologies and rigorous blinding to validate these promising early findings.

Key words: migraine, manual therapy, trigger points, headache, physical therapy.

Introduction

Migraine is a highly prevalent and disabling neurological disorder, affecting approximately 15% of the global population, with a higher prevalence in women. Migraine is characterized by recurrent headache attacks, often accompanied by nausea, vomiting, and increased sensitivity to light and sound. (1) Migraine attacks can significantly impair quality of life and lead to a substantial socioeconomic burden. Over the past decade, there has been significant progress in understanding migraine pathophysiology, which has paved the way for developing new targeted therapies. In addition to traditional treatments, like non-steroidal anti-inflammatory drugs or triptans as acute medications, or beta-blockers, antidepressants, and antiseizure medications for prophylaxis, new pharmacological options, such as lasmiditan, onabotulinumtoxinA, anti-CGRP monoclonal antibodies and gepants, have emerged, offering more effective and safer treatment options (refs). Despite these advancements, many patients continue to seek non-pharmacological treatments, often in combination with pharmacological approaches, to better manage their symptoms and improve their quality of life. (2,3) Among the various non-pharmacological therapies, manual trigger point therapy has been proposed for the management of migraine. (4-6)

Trigger points are palpable and painful nodules located in muscles that have been associated with migraine and may play a role in the exacerbation of the disease. (12,13) Manual trigger point therapy techniques, such as massage or manipulation, aim to reduce muscle tension and alleviate the painful symptoms associated with migraine. (12,14,15) The rationale behind the efficacy of manual therapy in migraine management is supported by its ability to address cervical musculoskeletal impairments, which have been shown to vary throughout the different phases of the migraine cycle. A recent study by Di Antonio *et al.* (2022) showed that trigger points and muscle tension can affect both the frequency and intensity of migraine attacks. Manual therapy is supposed to provide benefits to migraine patients by alleviating musculoskeletal dysfunctions. (16) The objective of this review is to examine the efficacy of manual trigger point treatment in migraine, with specific focus on the results of randomized clinical trials (RCTs). This scoping review critical synthesis of the currently available scientific evidence analyzes data from five studies with PEDro scores and ROB 2 to discuss manual trigger point therapy in the management of migraine symptoms and the quality of life of individuals affected by this condition.

Methods

The present scoping review was conducted following the JBI methodology (17) for scoping reviews. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (18) Checklist for reporting was used.

Review question. We formulated the following research question: "Can manual therapy targeting trigger points effectively reduce the frequency and intensity of migraine attacks, ultimately improving the quality of life for migraine sufferers?"

Eligibility criteria. Studies were eligible for inclusion if they met the following Population, Concept, and Context (PCC) criteria.

Population: Individuals diagnosed with migraine according to the International Classification of Headache Disorders, 3rd edition (ICHD-3), regardless of age, gender, or other demographic factors.

Concept: Interventions involving manual therapy techniques tar-

geting trigger points as a treatment for migraine. This may include but is not limited to massage, manipulation, or other hands-on approaches aimed at reducing muscle tension and alleviating migraine symptoms.

Context: Randomized clinical trials (RCTs) conducted in various clinical settings, including hospitals, clinics, or research institutions, assessing the efficacy of manual therapy targeting trigger points in the management of migraines. Studies from different geographic regions and with diverse patient populations were considered for inclusion.

Exclusion criteria. Studies that did not meet the specific PCC criteria were excluded.

Search strategy. An initial limited search of MEDLINE was performed through the PubMed interface to identify articles on the topic. Then, the index terms used to describe the articles were used to develop a comprehensive search strategy for MEDLINE. The search strategy, which included all identified keywords and index terms, was adapted for use in Cochrane Central, Scopus, PEDro. Searches were conducted on 8 January 2024 with no date limitation. ("Migraine" or "Migraine Headache" or "Migraine Disorder" or "Migraine Syndrome") and ("Manual Therapy" or "Manual Treatment" or "Hands-on Therapy" or "Trigger Point Therapy" or "Muscle Manipulation" or "Muscle Massage" or "Myofascial Release") and ("Randomized Clinical Trial" or "Randomized Controlled Trial" or "RCT" or "Clinical Study" or "Clinical Trial" or "Intervention Study" or "Treatment Outcome Study") and ("Effectiveness" or "Efficacy" or "Impact" or "Reduction" or "Improvement") or ("Quality of Life" or "Patient Well-being" or "Health-Related Quality of Life" or "Symptom Relief" or "Pain Management").

Study selection. The process described involves a systematic approach to selecting studies for a scoping review. Initially, search results were collected and refined using EndNote, with duplicates removed. The screening involved two levels: title and abstract review, followed by full-text assessment, both conducted independently by two authors with discrepancies resolved by a third. The selection adhered to the PRISMA 2020 guidelines, ensuring transparency and reliability. This rigorous methodology aimed to identify relevant articles that directly address the research question, maintaining a comprehensive and systematic approach in the review process. This scoping review was conducted by a single author, selecting papers with a PEDro score raging from 4/11 to 7/11, and ROB, who sought input from three external reviewers to minimize bias. These reviewers, not involved in the manuscript as authors, provided independent evaluations of the search strategy and study selection to ensure objectivity and reduce potential bias.

Data extraction and data synthesis. Data extraction for the scoping review was done using a form based on the JBI tool, capturing crucial details like authorship, publication country and year, study design, patient characteristics, outcomes, interventions, procedures, and other relevant data. Descriptive analyses of this data were conducted, with results presented numerically to show study distribution. The review process was clearly mapped for transparency, and data were summarized in supplementary tables for easy comparison and understanding of the studies' key aspects and findings.

Results

As presented in the PRISMA 2020-flow diagram (**Figure 1**), from 61 records identified by the initial literature searches, 56 articles were excluded, and 5 were included (**Supplementary Table 1**). The quality of the studies was assessed with PEDro scale and RoB 2 (**Supplementary Table 2**). This table presents a combined evaluation of the included studies' methodological quality and risk of bias. The PEDro score (ranging from 0 to 10) is used to assess the overall quality of each study, while the ROB 2 scale is applied to evaluate the risk of bias across five domains: randomization, deviations from intended interventions, outcome measurement, handling of incomplete data, and selection of reported outcomes. This integrated approach provides a comprehensive assessment of each study's reliability and potential biases, facilitating a more informed interpretation of the findings.

In this review, five studies (7-11) that met the inclusion criteria were evaluated, each presenting different designs, patient populations, and intervention settings. Among these, all studies primarily involved adult patients diagnosed with migraine according to the ICHD-3 criteria; none of the studies specifically targeted a pediatric population. The designs varied from randomized controlled trials (RCTs) to pilot studies, with sample sizes ranging from 22 to 50 patients. The settings included clinical environments, such as hospitals and outpatient clinics, where manual trigger point therapy was combined with conventional migraine treatments.

Co-treatments in these studies frequently involved pharmacological interventions, including nonsteroidal anti-inflammatory drugs (NSAIDs), triptans, beta-blockers, or onabotulinumtoxinA. The inclusion of NSAIDs aligns with the typical pharmacological management of migraines, particularly in acute settings. Triptans and beta-blockers were more commonly used in combination with other therapies rather than as standalone treatments, and onabotulinumtoxinA was limited to patients with chronic migraines. The studies did not report exclusive reliance on beta-blockers or onabotulinumtoxinA, reflecting a more integrative approach to migraine management. Follow-up periods across the studies ranged from 1 to 4 months, assessing both the immediate and longer-term effects of the interventions.

In terms of interventions, trigger point therapy techniques varied across the five studies, encompassing methods such as positional release therapy, (7) myofascial release, (11) and manual lymphatic drainage. (9) Each intervention was delivered in the context of a structured treatment protocol, often combined with standard care. For example, trigger point therapy was provided alongside medication, (7) while other studies included additional physical therapies, such as cervical mobilization, and transcutaneous electrical nerve stimulation (TENS). The outcome measures varied but typically included headache frequency, intensity, duration, and the need for analgesics. PEDro scores of the included studies ranged from 4/10 to 7/10, reflecting variations in study quality, particularly in terms of blinding and allocation concealment (**Supplementary Table 2**). The ROB 2 analysis showed that (**Supplementary Table 2**). While all studies reported a reduction in migraine frequency and intensity, the studies with higher PEDro scores (26) provided more robust evidence of effectiveness, emphasizing the importance of manual therapy as a co-treatment rather than a standalone option. The PEDro score is based on a checklist of 11 criteria used to assess the methodological quality of clinical trials. However, the maximum score achievable is 10 because the first criterion verifies whether the study mentions random allocation is considered a prerequisite for inclusion in the PEDro database but is not factored into the overall quality score. This approach ensures that all studies assessed meet basic standards of randomization while focusing the scoring system on other methodological aspects.

Ghanbari *et al.* (7) reported that the combination of medical therapy with trigger point manipulation provided a better benefit compared to medical therapy alone, underscoring the potential of physical therapies to enhance the effectiveness of conventional medical treatments. (19) Another study (8) found that the addition

of physical therapy to standard migraine treatment, specifically combining trigger point therapy with cervical mobilization techniques, to standard migraine treatment—such as the use of NSAIDs, triptans, or prophylactic medications like beta-blockers—showed some improvement in headache frequency and pain threshold, although the difference with placebo in other studies did not reach the significance level. (20–22) This finding suggests a need for further investigation into the specific benefits of physical therapy in migraine treatment. Yedikardachian *et al.* (9) revealed that a combined approach involving trigger point therapy and manual lymphatic drainage was more effective in migraine prophylaxis than trigger point therapy alone, highlighting the potential advantages of a multi-modal physical therapy approach. Gandolfi *et al.* (10) reported that myofascial and trigger point treatments could reduce both pain intensity and the necessity for analgesics in patients undergoing onabotulinumtoxinA injections for chronic migraine, suggesting an additional non-pharmacological strategy for managing chronic migraine. Moreover, Espí-López *et al.* (11) showed that soft tissue techniques had a positive impact on headache severity, disability, and overall quality of life in migraine sufferers, emphasizing the broader implications of manual therapies beyond mere pain management.

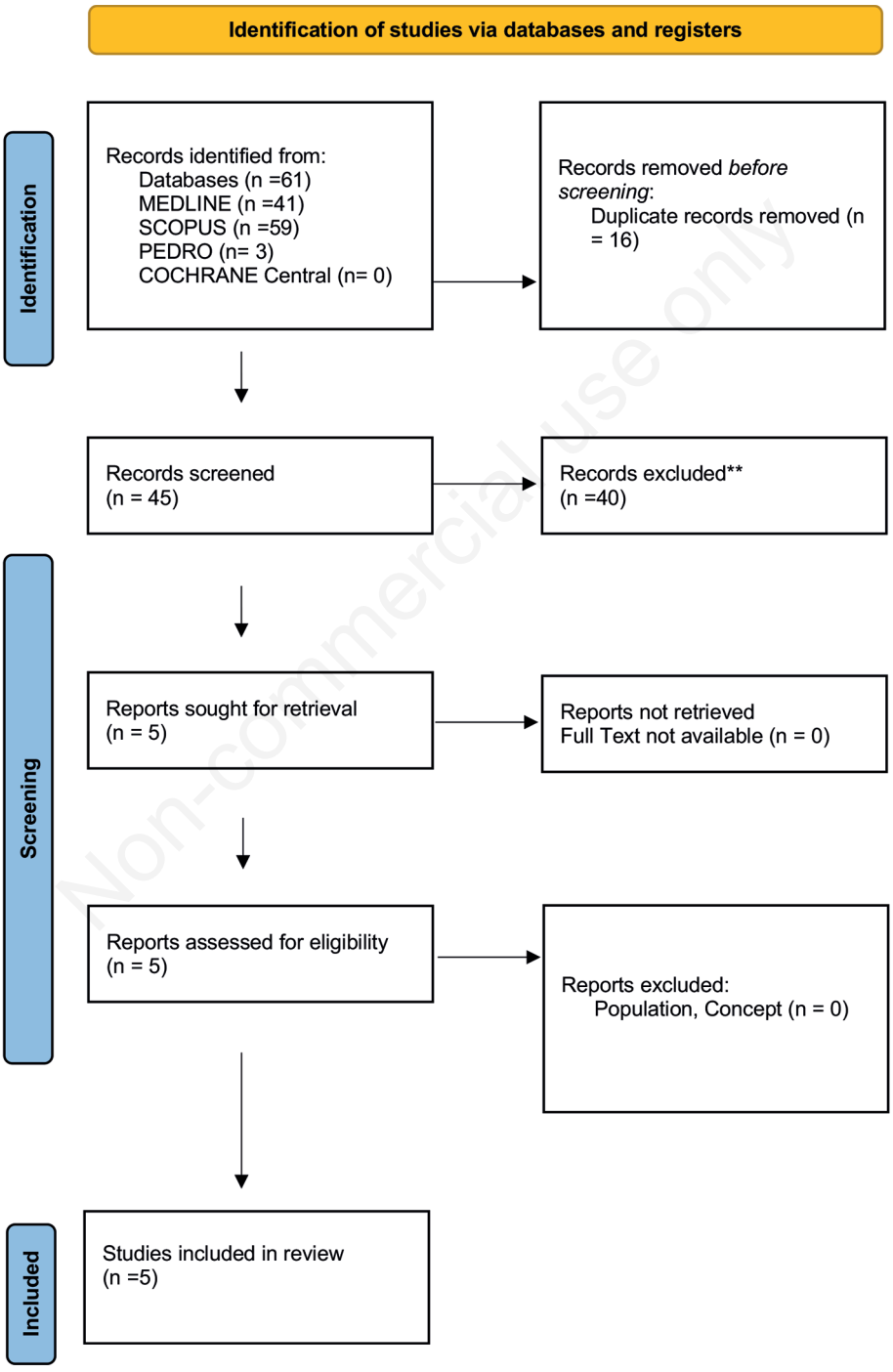

Figure 1. Preferred reporting items for systematic reviews and meta-analyses 2020 (PRISMA) flow-diagram.

Discussion

The cumulative analysis of these studies on manual trigger point treatment for migraine management presents a complex landscape with several critical implications. Primarily, the evidence suggests that manual therapy, when integrated with standard medical treatments, can provide some benefits in managing migraine symptoms. This finding highlights the importance of a holistic approach to migraine treatment that combines pharmacological and non-pharmacological methods. However, the variability in treatment protocols across the studies prevents firm conclusions and underscores the urgent need for standardized methodologies in future research. Such standardization is essential not only for establishing consistent treatment protocols but also for enabling more robust comparative analyses across studies. The methodological quality, as reflected in the different PEDro scores, varied significantly among the five studies, indicating a need for more rigorous research designs, including improved blinding methods, to enhance the reliability and validity of the findings. The challenge of maintaining blinding in manual therapy research, particularly in terms of therapist and participant blinding, is noteworthy and necessitates innovative approaches to minimize potential biases. From a clinical perspective, these studies collectively reinforce the potential role of manual therapy, including trigger point treatment, in migraine management.

The studies included in this review might highlight the potential benefits of manual therapy. However, the methodology across the studies reveals important limitations. The present review did not specify the sample sizes of individual studies, which may prevent the identification of potential subgroup effects. (23) Additionally, the present review lacks citations or specific references to the studies that formed its basis, which are essential for readers to assess the quality and reliability of the evidence. Inclusion criteria for different interventions made it challenging to directly compare outcomes across different treatment modalities, which could affect the ability to draw clear conclusions. (24,25) Moreover, the follow-up assessments at 1, 2, and 4 months may not have been sufficient to capture long-term effects or relapse rates beyond the 4-month period. The review did not discuss the potential for publication bias, a common concern in systematic reviews, which could have led to the exclusion of unpublished or negative studies, potentially skewing the overall results. Finally, some important details, such as specific statistical results and effect sizes, were not provided, which are crucial for a thorough understanding of the findings. The characteristics of the study populations were also not specified, making it difficult to determine the generalizability of the findings to broader migraine patient populations. The present analysis highlights the need for more comprehensive and well-designed research to fully understand the role and efficacy of manual therapies in migraine management and to potentially integrate these therapies into standard treatment protocols, offering patients more holistic and effective management options.

Conclusions

The scoping review highlights that a variety of physical therapy interventions can be explored for the management of migraines. Positional release therapy, for example, may be considered either as a standalone treatment or in combination with traditional or innovative pharmacological approaches. While the findings are promising, further research with robust methodologies, larger sample sizes, and longer follow-up periods is necessary to validate the effectiveness of these interventions.

References

1. Awaki E, Takeshima T, Matsumori Y, Hirata K, Miyazaki N, Takemura R, et al. Impact of Migraine on Daily Life: Results of the Observational survey of the Epidemiology, Treatment, and Care of Migraine (OVERCOME [Japan]) Study. Neurol Ther 2024;13:165–82.
2. Shapiro RE, Nicholson RA, Seng EK, Buse DC, Reed ML, Zagar AJ, et al. Migraine-Related Stigma and Its Relationship to Disability, Interictal Burden, and Quality of Life. Neurology 2024;102:e208074.
3. Tedeschi R, Pillastrini P, Pierangeli G, Favoni V, Cortelli P, Cevoli S. Is physiotherapy in migraines known to sufferers? A cross-sectional study. Neurol Sci 2023.
4. Ashina M, Lipton RB, Ailani J, Versijpt J, Sacco S, Mitsikostas DD, et al. Responder rates with eptinezumab over 24 weeks in patients with prior preventive migraine treatment failures: post hoc analysis of the DELIVER randomized clinical trial. Eur J Neurol 2024;31:e16131.
5. de Vries Lentsch S, van der Arend BWH, de Boer I, van Zwet EW, MaassenVanDenBrink A, Terwindt GM. Depression and treatment with anti-calcitonin gene related peptide (CGRP) (ligand or receptor) antibodies for migraine. Eur J Neurol 2024;31:e16106.
6. Alsaadi T, Kayed DM, Al-Madani A, Hassan AM, Krieger D, Riachi N, et al. Acute Treatment of Migraine: Expert Consensus Statements from the United Arab Emirates (UAE). Neurol Ther 2024.
7. Ghanbari A, Askarzadeh S, Petramfar P, Mohamadi M. Migraine responds better to a combination of medical therapy and trigger point management than routine medical therapy alone. NeuroRehabilitation 2015;37:157–63.
8. Bevilaqua-Grossi D, Gonçalves MC, Carvalho GF, Florencio LL, Dach F, Speciali JG, Bigal ME, Chaves TC. Additional Effects of a Physical Therapy Protocol on Headache Frequency, Pressure Pain Threshold, and Improvement Perception in Patients With Migraine and Associated Neck Pain: A Randomized Controlled Trial. Arch Phys Med Rehabil. 2016;97:866-74.
9. Yedikardachian D, Quasthoff S, Lechner AT, Giuliani A, Fazekas F. [Migraine prophylaxis with trigger point therapy and lymphatic drainage: A pilot study]. Wien Med Wochenschr 2017;167:359–67.
10. Gandolfi M, Geroin C, Valè N, Marchioretto F, Turrina A, Dimitrova E, et al. Does myofascial and trigger point treatment reduce pain and analgesic intake in patients undergoing onabotulinumtoxinA injection due to chronic intractable migraine? Eur J Phys Rehabil Med 2018;54:1–12.
11. Espí-López GV, Ruescas-Nicolau MA, Nova-Redondo C, Benítez-Martínez JC, Dugailly PM, Falla D. Effect of Soft Tissue Techniques on Headache Impact, Disability, and Quality of Life in Migraine Sufferers: A Pilot Study. J Altern Complement Med 2018;24:1099–107.
12. Tedeschi R. Unveiling the Potential of Trigger Point Therapy: Exploring its Efficacy in Managing Muscular Spasticity - A Scoping Review. Muscles, Ligaments and Tendons Journal 2023;13:564–73.
13. Liu L, Huang QM, Liu QG. In vitro culture of muscle cells derived from myofascial trigger points. Acupunct Med 2024;42:39–43.
14. Perreault T, Arendt-Nielson L, Fernández-de-Las-Peñas C, Dommerholt J, Herrero P, Hubbard R. Intramuscular Electrical Stimulation for the Treatment of Trigger Points in Patients with Chronic Migraine: A Protocol for a Pilot Study Using a Single-Case Experimental Design. Medicina (Kaunas) 2023;59:1380.

15. Tedeschi R. An overview and critical analysis of the Graston technique for foot-related conditions: a scoping review. Manuelle Medizin 2024.
16. Di Antonio S, Arendt-Nielsen L, Ponzano M, Bovis F, Torelli P, Finocchi C, Castaldo M. Cervical musculoskeletal impairments in the 4 phases of the migraine cycle in episodic migraine patients. Cephalalgia 2022;42:827-45.
17. Peters: Joanna Briggs Institute Reviewer's Manual, JBI - Google Scholar [Internet]. [cited 2022 Jun 9]. Available from: https://scholar-google-com.ezproxy.unibo.it/scholar_lookup?hl=en&publication_year=2020&author=MDJ+Peters&author=C+Godfrey&author=P+McInerney&author=Z+Munn&author=AC+Tricco&author=H+Khalil&title=Joanna+Briggs+Institute+Reviewer%27s+Manual%2C+JBI.
18. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann Intern Med 2018;169:467–73.
19. Zhang B, Xi Y, Huang Y, Zhang Y, Guo F, Yang H. Integration of single-nucleus RNA sequencing and network disturbance to elucidate crosstalk between multicomponent drugs and trigeminal ganglia cells in migraine. J Ethnopharmacol 2024; 319:117286.
20. Pietramaggiori G, Bastin A, Ricci F, Bassetto F, Scherer S. Minimally invasive nerve and artery sparing surgical approach for temporal migraines. JPRAS Open 2024;39:32–41.
21. Smirnoff L, Pham K. A Role for Visual Art Therapy in the Management of Migraine. Curr Pain Headache Rep 2024.
22. Schrepf A, Maixner W, Fillingim R, Veasley C, Ohrbach R, Smith S, et al. The Chronic Overlapping Pain Condition Screener. J Pain 2024;25:265–72.
23. Turolla A, Guccione AA, Tedeschi R, Pillastrini P. Is Clinical Research as Helpful to Clinicians as It Could Be? Physical Therapy 2023;103.
24. Tedeschi R, Giorgi F. What is known about the RegentK regenerative treatment for ruptured anterior cruciate ligament? A scoping review. Manuelle Medizin 2023;61:181–7.
25. Tedeschi R. Can beneficial frequencies in physiotherapy help treatment? Scoping Review. Rwanda Medical Journal 2023; 80:88–94.
26. https://pedro.org.au/

Online supplementary material:

Supplementary Table 1. Main characteristics of the five experimental studies.

Supplementary Table 2. Combined Assessment of Study Quality Using PEDro and ROB 2 Scales. Summary of the key characteristics and quality assessments of the studies included in the review. The columns provide information on the number of participants, the type of intervention used, any co-treatments provided, the follow-up duration, outcome measures, and the quality of each study as evaluated by the PEDro scale and RoB 2 tool. All studies were randomized controlled trials (RCTs).

Correspondence: Roberto Tedeschi, Department of Biomedical and Neuromotor Sciences (DIBINEM), Alma Mater Studiorum University of Bologna, Via Zamboni 33, 40126 Bologna, Italy. Tel.: +393472988475. E-mail: roberto.tedeschi2@unibo.it

Authors' contributions: RT proposed the review project and identified the framework, proposed the methodology, and identified the search strategy.

Conflict of interest: there are no conflicting relationships or activities.

Funding: this study received no specific grant from public, commercial, or not-for-profit funding agencies.

Ethics approval and consent to participate: this article does not contain any studies with human participants performed by any of the authors.

Informed consent: patient consent is not required as there were no patients in this study.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

Received: 16 September 2024. Accepted: 13 November 2024.

Confinia Cephalalgica 2024; 2:15777. doi:10.4081/cc.2024.15777