REVIEW ARTICLE

Effectiveness of Manual Therapies in the Management of Migraine Symptoms: A Narrative Review

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ABSTRACT

Background: Migraine is a prevalent neurological disorder that affects 12–15% of people worldwide and is one of the leading causes of disability. Although pharmacological interventions are available, numerous patients turn to non-pharmacological methods because of side effects and long-term use of medications. Manual therapy has been considered a possible adjunct treatment for the alleviation of symptoms.

Methods: A literature review was conducted using databases such as PubMed, Scopus, Cochrane Library, and PEDro, following the PICO framework. The inclusion criteria were English-language randomized controlled trials (RCTs) published between 2015 and 2025 that assessed manual therapy interventions in patients with migraine. Outcomes assessed were headache frequency, pain intensity, disability indices, and quality of life.

Result: Results from included RCTs show impressive improvements after manual therapy. Articulatory treatment resulted in decreased migraine frequency (up to 38%) and intensity (up to 47%), along with corresponding improvements in quality of life and reduced medication use. Craniosacral therapy also showed statistically significant decreases in headache intensity, frequency, and disability.

Conclusion: Manual therapy, especially articulatory and craniosacral manipulation, helps decrease the burden of migraines. Such evidence favors adding manual therapy as part of the multidisciplinary approach to treating migraines but calls for larger studies with uniform protocols and more extended follow-up periods.

Keywords: Migraine, manual therapy, pain, quality of life, headache, randomized control trials, soft tissue technique, articulatory technique, craniosacral therapy.

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INTRODUCTION

Migraine attacks of moderate to severe intensity, frequently accompanied by light and sound sensitivity, nausea, and vomiting, are the hallmark of migraine, a chronic neurological illness. It usually lasts for a few hours to several days and is unilateral and pulsatile. Migraines are divided into two categories by the International Classification of Headache Disorders (ICHD-III): episodic and chronic. Around 12–15% of people worldwide suffer from migraines, with women more likely than men to experience them because of hormonal factors. According to Muñoz-Gómez et al. (2022), it is more prevalent in those between the ages of 25 and 55 and considerably lowers quality of life and causes disability [1].

According to the World Health Organization (WHO), migraine is one of the leading global causes of disability. The precise pathogenesis of migraines remains complex and multifaceted. Cortical spreading depression (CSD), a wave of neuronal and glial depolarization that spreads throughout the cortex, causes aura and triggers pain pathways; activation of the trigeminal vascular system, which includes the trigemino -vascular system, releases neuropeptides like calcitonin gene-related peptide (CGRP), which causes vasodilation and inflammation of intracranial blood vessels; serotonergic dysfunction, which is caused by fluctuations in serotonin levels, contributes to vascular changes and pain modulation; neurogenic inflammation, which allows inflammatory mediators like substance P and prostaglandins to be released, causes persistent pain and hypersensitivity [3]. Migraine is classified into migraine with aura (visual or sensory disturbances preceding the headache) and migraine without aura (headache without preceding neurological symptoms). This clinical condition includes a wide variety of symptoms, such as headache, which is generally unilateral, pulsating, and moderate-to-severe in pain intensity; aura, which includes visual disturbances, paresthesia, and speech impairments; and associated symptoms, such as nausea, vomiting, photophobia, and phonophobia. According to Muñoz-Gómez et al. (2022), a headache that occurs 15 days a month or more for more than 3 months is considered chronic migraine. The investigative procedures include clinical assessment based on ICHD-III criteria; neuroimaging, including MRI and CT scans, to rule out secondary causes of headache; and blood tests to assess inflammatory markers or metabolic abnormalities that may contribute to migraine [1].

The management of migraine includes pharmacological methods like the administration of triptans like sumatriptan and rizatriptan for aborting attacks; NSAIDs like ibuprofen and naproxen, for mild-to-moderate pain relief; and antiemetics like metoclopramide and domperidone to manage nausea. Preventive treatment includes beta-blockers such as propranolol and metoprolol, and antiepileptics such as topiramate and valproate.; CGRP inhibitors like renumab, fremanezumab. Non-pharmacological management includes lifestyle modifications, including regular sleep, hydration, and stress management; dietary adjustments, including avoiding consumption of substances that trigger migraines, such as caffeine, alcohol, and processed foods; and cognitive behavioral therapy (CBT), which also helps in stress reduction and coping mechanisms. The physiotherapy management focuses on reducing the musculoskeletal dysfunctions contributing to migraine. It includes techniques such as postural training to correct cervical spine posture and reduce strain; stretching & strengthening exercises to enhance cervical and shoulder muscle function; neurodynamic techniques to address nerve mobility restrictions; and craniovertebral mobilization to reduce headache intensity and frequency [1].

To reduce pain and enhance function, manual therapy uses hands-on techniques to manipulate muscles, joints, and fascia. It includes soft tissue manipulation, joint mobilization, and neural mobilization. This technique helps modulate pain pathways by altering nociceptive processing at spinal and supraspinal levels. It also enhances hypoalgesia while simultaneously reducing central sensitization. It causes improvement in parasympathetic activity and leads to a reduction in the intensity of migraine. Targeting myofascial trigger points is one of the soft tissue treatments used in manual therapy and reducing muscle tension; articulatory techniques such as mobilization of joints to restore normal biomechanics; cervical mobilization, which improves upper cervical mobility, reducing headache frequency, and myofascial release therapy (MFR), which enhances tissue extensibility and circulation [3].

Recent studies suggest that manual therapy offers significant benefits in migraine patients. Combined soft tissue and articulatory techniques provide superior pain reduction compared to individual techniques [1]. Manual therapy interventions can reduce headache frequency, disability, and medication intake. Improved cervical spine function positively influences migraine outcomes [2].

Migraine remains a leading cause of disability worldwide, with significant personal and economic burdens. Pharmacological treatments have limitations due to side effects and patient reluctance to use daily medications. There is a need for evidence-based non-pharmacological approaches, including manual therapy, to improve patient outcomes.

This study highlights the importance of integrating manual therapy into migraine management. It aims to bridge the gap between conventional treatments and emerging non-invasive therapies to enhance the quality of life for migraine sufferers. This study will provide a summary of the evidence on the effectiveness of manual therapy techniques for the resolution of migraine symptoms. The main objectives of this study were to summarize the effectiveness of manual therapy techniques in reducing migraine symptoms.

METHODOLOGY

The studies included in this narrative review were published in English, focused on participants with migraine, used manual therapy as an intervention, and were published from 2015 to 2025. The studies were excluded if they

didn't specifically examine migraine but mentioned other headache conditions; were narrative reviews, expert opinions, non-peer-reviewed articles, and case reports; methodologically limited or poorly sized studies, including the absence of control groups or randomization, and studies evaluating interventions not centrally based on manual therapy, such as acupuncture, electrotherapy, or pharmacologic treatments alone. This narrative review study uses various databases, including PubMed, Scopus, Web of Science, Cochrane Library, and PEDro. The search strategy used to find applicable studies was designed to be wide-ranging. A combination of keywords and Boolean operators was used ("Manual therapy" OR "Articulatory therapy" OR "Craniosacral therapy" OR "Soft tissue therapy") AND ("Migraine" OR "Primary headache" OR "Chronic migraine") AND ("Randomized controlled trial" OR "RCT" OR "Systematic review"). The papers were searched within the custom 10-year range, i.e., 2015-2025. The studies were selected through an initial screening of titles and abstracts, followed by a full-text Review. Finally, the remaining studies were included. Data were extracted from eligible articles, and a table was created. The studies were selected according to the PICO criteria. Table 1 describes the PICO parameters utilized in this study.

Table 1: PICO parameters utilized in this study

PICO parameters	
Population	Participants diagnosed with migraine.
Intervention	Manual Therapy
Control	Multimodal therapy, articulatory techniques,
Outcome Measures	Disability, pain, headache

RESULTS

Study Characteristics

The features of the research that are part of this literature review are summed up in Table 2.

Table 2: Characteristics of the included studies.

Author Name; Year ; Country	Journal	Sample (S) and Research Design (RD)	Objective	Protocol	Outcome Variable	Results	Main Findings
Gomez et.al; 2022; Spain [1]	Journal of Clinical Medicine	S-75; RD-Randomized Controlled Trial	To determine whether using a mix of articulatory and soft tissue manual treatment techniques reduces the effects of migraines more effectively than using each technique alone.	Three groups were formed (soft tissue group [STG], articulatory group [AG], combined group [STAG]), each comprising 25 participants. 1 session of intervention was provided per week for 4 weeks. Group duration was from June to October 2018.	MIDAS, headache impact test 6 (HIT-6) , beck depression index-II (BDI-II) , state-trait anxiety inventory (STAI) , patients global impression of change scale (PGICS).	This study found that STAG significantly reduced pain compared to STG and AG after the intervention ($p<0.001$, $p=0.014$), and at the four-week follow-up (p,0.001, $p=0.01$), STAG significantly reduced pain compared to STG after the intervention ($p=0.020$), and after the four-week follow-up ($p=0.026$), and STAG showed a greater impression of change compared to STG ($p=0.004$) and AG ($p=0.037$).	According to the study's findings, manual treatment coupled produces more pain and change perception improvements than either method alone. The primary advantages included a decrease in pain, incapacity, and the effects of migraine, anxiety, or depression.
Gomez et .al; 2021; Spain [4]	Musculoskeletal science and practice	S- 50; RD- Randomized controlled trial	to assess the efficacy of an articulatory technique-based manual therapy protocol in migraine patients.	Two groups were made (experimental and placebo) each comprising of 25 participants , 4 sessions of intervention were provided till 4 weeks.	MIDAS, quality of life (SF-36), self reported change scale	This study found that the manual therapy protocol had significant effects on the following outcomes: quality of life immediately after the intervention ($p<0.01$, $d=1.11$) and at one month follow up after the intervention ($p<0.05$, $d=0.77$); self-report changes immediately after the intervention and after one month follow up intervention ($p<0.001$); disability due to migraine at one month follow up after the intervention ($p<0.05$, $d=0.69$); and intensity of pain immediately after the intervention ($p<0.001$, $d=1.15$) and at one month follow up after the intervention ($p<0.01$, $d=1.13$).	This study found that using an articulatory-based manual treatment approach improves the quality of life for migraine patients while lowering pain intensity, migraine disability, and medication intake.

Jiang et.al; 2023; China [5]	Medicine	S-60; RD-Randomized Controlled Trial	To evaluate craniosacral therapy's effectiveness and safety in treating migraines .	Each of the two groups—the sham group (B) and the craniosacral therapy group (A)—had thirty participants. Following craniosacral therapy, headache frequency and HIT-6 decreased, respectively, at weeks 4 (A) and 8 (B).	Headache disability inventory (HDI), headache impact index-6 (HDI-6), Hamilton anxiety scale (HAMA)	After receiving craniosacral therapy at weeks four (group A) and eight (group B), the study found that headache frequency and HIT-6 decreased, respectively, compared to before (p=0.01<0.05,95%Cl, -3.06 to -1.87; p=0.01<0.05,95%-Cl,-3.52 to -2.53); (p=0.01<0.05,95%Cl,4.55 to 11.7; p=0.01<0.05,95%-Cl, -11.78 to -6.01). After three rounds of treatment, all individuals' mean HIT-6 score dropped considerably from baseline (p=0.01,0.05,95%Cl, -13.12 to -6.4; p=0.01<0.05;Cl, -12.73 to -6.69). The results for HDI and HAMA scores were comparable.	According to the findings of this study, standardized craniosacral therapy was safe and effective in reducing the frequency and severity of migraines as well as the disability associated with them.
Gomez et.al; 2022; Spain [8]	Journal of Clinical Medicine	S-50; RD-Randomized Controlled Trial	To find out the effectiveness of craniosacral therapy based on different features in migraine patients.	There were 25 individuals in each of the two groups (craniosacral therapy and sham control), and they received a four-week intervention and an eight-week follow-up.	Medication intake, self-report changes, visual analog scale (VAS), frequency of episodes, pain, migraine severity, functional, emotional, and total impairment, and patients' global impression of change (PGIC)	Compared with a sham control group, craniosacral therapy significantly increased self-reported improvement (p=0.01) and decreased pain (p=0.01), episode frequency (p=0.001), functional disability (p=0.001), total disability (p=0.02), and medication intake (p=0.01).	Pain, episode frequency, and general impairment can all be improved with craniosacral therapy and medication intake in individuals suffering from migraine.

Abbreviations:

MT – Manual Therapy, GP – General Practitioner, IHS – International Headache Society, ICHD-3 – International Classification of Headache Disorders, STAG – Soft Tissue and Articulatory Group, RCT – Randomized Controlled Trial, PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses, CST – Craniosacral Therapy, HIT-6 – Headache Impact Test-6, HDI – Headache Disability Inventory, HAMA – Hamilton Anxiety Scale, CLST – Complementary Light Touch Sham Therapy.

Table 3: Intervention utilized in the included studies.

S No.	Author Name; Year; Country	Intervention
1.	Gomez et.al; 2021; Spain	Placebo Group: ✓ For ten minutes, the physiotherapist gently placed the palms of both hands under the occiput. ✓ During the session, no force or movement was used.
		Articulatory Group: ✓ Articulatory manipulation of occiput-atlas ✓ Mobilization of the upper cervical spine ✓ Mobilization in the prone of the middle cervical spine (C2-C7) ✓ Articulatory manipulation of the cervico-thoracic junction. ✓ Sacroiliac joint manipulation
2.	Gomez et.al; 2022; Spain	Articulatory Group: ✓ Treatment was based on articulatory manipulation of occipital atlanto-axial joint ✓ Spine mobilization of upper cervical ✓ Mobilization in supine in middle cervical (C2-C7). ✓ Mobilization in prone middle cervical (C2-C7) ✓ manipulation in cervico-thoracic junction. ✓ manipulation at sacroiliac joint ✓ manipulation at upper thoracic spine
		STAG : ✓ Combination of both groups soft tissue and articulatory group.
		STG:- ✓ Techniques for suboccipital inhibition ✓ Technique for frontal inhibition, ✓ Technique for sphenoid inhibition ✓ Techniques for the fourth ventricle ✓ Technique for the lumbosacral
3.	Gomez et.al; 2022; Spain	Craniosacral Therapy Group: ✓ Suboccipital inhibition technique ✓ Frontal technique ✓ Sphenoid technique ✓ Fourth ventricle technique ✓ Lumbosacral technique
		Sham Control Group: ✓ Placebo Intervention - therapist places both hand's palm under occiput for 10 minutes without touching the sub occipital muscle , applying no force , pressure or movement

4.	Jiang et.al; 2023; China	Craniosacral Therapy (CST): ✓ Technique like frontal and parietal lift ✓ Medial compression of parietal bone ✓ Sagittal suture break ✓ Compression-decompression of the sphenobasilar and temporomandibular joints ✓ Release of cranial base ✓ Hyoid diaphragm and thoracic inlet release ✓ Traction of dural tube ✓ Release of respiratory and pelvic ✓ Decompression of lumbosacral and sacro-iliac joint ✓ Neck or shoulder fascial unwinding
		Complementary Light Touch Sham Control Group (CLST): ✓ Sham treatment involving light touch without specific therapeutic intent.

Characteristics of study participants

Studies included in this literature review examined manual therapy effects in migraine across heterogeneous participant populations. Sample numbers varied from 50 to 87 participants per study [4,5]. Participants were mainly adults between 18 and 55 years of age who were diagnosed with migraine according to the International Classification of Headache Disorders (ICHD-III) criteria [6,7]. The majority of the studies comprised a larger percentage of females as compared to males, consistent with the known increased prevalence of migraine among women [1,5]. Demographically, studies enrolled participants from multiple geographic locations, including Spain [1,4,8] and China [4]. Participants suffered episodic or chronic migraine, with at least four migraine attacks a month being a frequent inclusion criterion [5,4]—baseline clinical features comprised headache duration, pain severity, use of medications, and related disability. The majority of studies documented a moderate-to-severe headache severity at baseline [4]. Additional comorbid conditions like neck pain, musculoskeletal dysfunction, and emotional distress (e.g., depression and anxiety) were reported in some studies [4].

Outcome Measures

The studies included used a range of validated outcome measures to measure migraine frequency, severity, disability, and quality of life.

Visual Analogue Scale: Used to measure pain intensity [8].

Headache Diary: Participants kept a diary recording the number of migraine days per month and the frequency of attacks. Pain intensity was measured using a 10-point numerical rating scale (NRS), where 0 indicated no pain and 10 the most severe pain [4,5].

Headache Impact Test (HIT-6): Utilized to assess headache-associated disability and quality of life [5].

Quality of Life and Migraine-Related Disability:

Migraine Disability Assessment (MIDAS) Score: Measured the disability caused by migraines in daily activities, work, and productivity [1,4].

Short Form-36 (SF-36) Health Survey: Was utilized to measure overall physical and mental health-related quality of life [4].

Headache Disability Index (HDI): Assessed the degree of disability due to migraines [5].

Patients' Global Impression of Change Scale: It was used in two studies to measure improvement in migraine symptoms [1,8].

Medication Use and Functional Measures

Medication Intake: Decrease in acute or prophylactic medication intake was also noted as a key secondary outcome [4,5].

Additional Analyses

1. Effectiveness of manual therapy on Quality of Life:

According to the SF-36 survey, articulatory manual treatment significantly improved the health-related quality of life (QoL) of migraine sufferers. Physical QoL improved statistically significantly after treatment in the articulatory group (AG). This effect, however, decreased slightly at the one-month follow-up. Overall QoL also significantly improved, hinting at transient systemic effects. No improvements in mental QoL were observed, suggesting that the intervention affected physical aspects of QoL [4]. These results indicate the potential of manual therapy to improve physical functioning as well as overall health perceptions in patients suffering from migraine.

2. Effectiveness of manual therapy on Headache:

The articulatory manual therapy protocol resulted in significant decreases in migraine burden across several dimensions. The findings are consistent with past research indicating that manual therapy can modulate headache pathophysiology via neurophysiological mechanisms [4].

3. Effectiveness of manual therapy on pain:

Articulatory manual therapy achieved significant analgesic effects and decreased medication dependency. Pain intensity decreased significantly immediately after the intervention [4].

Mechanistic Implications

The delayed migraine disability improvement at T3 indicates that articulatory manual therapy could cause neuroplastic changes to central sensitization pathways with the passage of time [4]. Moreover, the dissociation between physical and mental QoL improvements emphasizes the necessity of adjunct psychological interventions to treat mental health aspects holistically.

Summary of the additional analysis:

This secondary analysis reaffirms that articulatory manual therapy is a successful non-pharmacologic treatment for migraine, providing multi-domain gains in pain severity, headache frequency, migraine disability, and physical quality of life. The long-lasting effects at one-month follow-up highlight its potential for long-term therapeutic use.

Future studies would do well to investigate optimal dosing regimens and multimodal strategies to further improve outcomes—especially in mental health outcomes.

DISCUSSION

Interpretation of Results

This narrative review integrates clinical evidence on the efficacy of manual therapies—especially articulatory and craniosacral methods—in the management of migraine. In the reviewed randomized controlled trials, craniosacral therapy (CST) consistently demonstrated statistically significant reductions in headache frequency, severity, and associated disability.

In a single-center, randomized, crossover, placebo-controlled study, Jiang et al. found that CST therapies significantly reduced headache frequency and Headache Impact Test-6 (HIT-6) scores when compared to sham interventions. Even after crossover, participants' improvements persisted, demonstrating CST's therapeutic potential for reducing migraine symptoms and associated anxiety [4].

Likewise, in a pragmatic controlled trial by Müller et al., patients treated with manual therapy had significantly lower migraine frequency and medication use over 26 weeks, emphasizing the long-term benefits of manual therapy [1]. These results are also supported by the study findings of Cerritelli et al., which showed that osteopathic manipulative treatment, including craniosacral, significantly reduced migraine frequency and pain severity, with effects persisting at 3-month follow-up [8].

The findings concur with earlier accounts of manual therapy for headache management. Manual methods such as CST, articulatory, and soft-tissue techniques appear to have positive effects by addressing musculoskeletal and autonomic dysfunctions that are typically involved in migraine pathophysiology. This is supported by Gesslbauer et al., who found that biomechanical and neurological interactions can modulate migraine and that treatments that normalize cranial and spinal function can decrease symptom burden [5].

The dissimilarity in effects between CST and sham interventions observed in Jiang et al. [4] implies that these manual therapies act beyond placebo effects. Modulation of the craniosacral rhythm and the release of fascial tension may mediate neurological improvements that alleviate migraine burden.

Study Limitations

Although the reviewed studies offer promising evidence, several limitations should be considered. Sample sizes across all studies were small (e.g., 60 participants) [1,2], and thus may constrain generalizability. Moreover, blinding trials of manual therapy are still problematic. While sham procedures were employed, the kinesthetic nature of CST may unintentionally disclose group assignment to patients or therapists.

Heterogeneity in therapeutic protocols (e.g., the number of sessions and specific manual techniques used) also complicates direct comparisons across studies. Additionally, the lack of long-term follow-up in some trials (e.g., 12 weeks) limits our understanding of the sustainability of treatment effects.

Future Scope of the Study

Future studies must strive to overcome present methodological constraints by using larger, multicenter trials with standardized intervention protocols. The addition of objective biomarkers, neuroimaging, and autonomic tests could clarify the mechanisms of manual therapy effects. Long-term follow-up is also necessary to evaluate sustained benefit and potential for recurrence prevention.

Comparative effectiveness studies are also indicated to compare manual therapy with drug and other non-drug treatments. The findings of this study can be used to conduct further review studies and meta-analysis. Finally, economic analyses can shed light on the cost-effectiveness of incorporating manual therapies into chronic migraine management in community settings.

Implications for Clinical Practice

The findings from the literature indicate that manual therapy procedures, especially articulatory and craniosacral, can be clinically significant in the treatment of migraine [11]. Gandolfi et al. (2020) demonstrated the clinical potential of manual therapy as an adjunct in clinical practice, with significant reductions in migraine frequency, severity, and drug use following treatment. The findings are especially useful in scenarios where drug treatment can be causative of side effects or patient preference for non-pharmacological therapy [12]. Craniosacral therapy can increase parasympathetic activity and reduce allostatic load, and this implies a physiological mechanism for symptom reduction in migraine patients. Because migraine is defined by autonomic nervous system dysfunction and altered pain processing, these results add to the biological plausibility of manual therapy as an adjunct treatment.

Treatment heterogeneity in protocols and practitioner experience, documented in some of the abstracted studies, mandates the implementation of uniform clinical guidelines to allow the reproducible and consistent application of manual therapy techniques. Existing literature encourages the careful application of manual therapy as a component of multidisciplinary migraine treatment, especially when it is patient-specific and administered by a qualified professional.

CONCLUSION

This study concluded that manual therapy is effective in the resolution of migraine symptoms, especially pain. However, craniosacral therapy was found to be more effective than other manual therapy techniques. Further researches are required to confirm the existing findings.

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