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SHORT COMMUNICATION

JMHRS JOURNAL OF MODERN HEALTH AND REHABILITATION SCIENCES

Osteopathic Manual Therapy Versus Conventional Conservative Therapy in the Management of Temporomandibular Disorders

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ABSTRACT

Background: Temporomandibular disorders (TMDs) are a group of musculoskeletal conditions affecting the temporomandibular joint (TMJ) and associated structures, leading to pain, restricted jaw movement, and impaired quality of life. Conventional conservative therapies, including pharmacological management, physical therapy, and occlusal splints, are widely used but may not provide long-term relief. Osteopathic manual therapy (OMT) has gained attention as a complementary approach, focusing on musculoskeletal alignment, soft tissue release, and neuromuscular re-education to address the root causes of TMD.

Objective: This short communication compares the effectiveness of OMT and conventional conservative therapies in TMD management, highlighting their respective benefits in pain relief, functional improvement, and patient outcomes.

Methods: A narrative analysis of existing clinical evidence and treatment principles was conducted, examining the mechanisms, advantages, and limitations of both approaches. OMT techniques such as myofascial release, balanced ligamentous tension, and craniosacral therapy were compared with pharmacotherapy, physical therapy, and occlusal splints in terms of symptom relief, functional restoration, and long-term efficacy.

Conclusion: Both OMT and conventional conservative therapies offer valuable options for TMD management. OMT may provide additional benefits by addressing underlying musculoskeletal dysfunctions and offering longer-lasting relief. Integrating OMT with conventional treatments could optimize therapeutic outcomes. Further research is needed to establish standardized treatment protocols.

Keywords: Temporomandibular Joint Disorders, Osteopathic Manipulative Treatment, Myofascial Release, Temporomandibular Joint Dysfunction Syndrome, Physical Therapy Modalities, Pain Management, Musculoskeletal Manipulations

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Disclaimers

Conflict of Interest: None declared

Data/Supplements: Available on request.

Funding: None

Ethical Approval: Respective Ethical Review Board

Study Registration: N/A

Acknowledgments: N/A

Article Info

Received: 11 March 2025, *Accepted:* 25 March 2025,

Published Online: 26 March 2025

How to Cite: Shujaat Rahman, Osteopathic Manual Therapy Versus Conventional Conservative Therapy in the Management of Temporomandibular Disorders. J Mod Health Rehab Sci. 2025;2(1):120.
Available from: https://jmhrs.com/index.php/jmhrs/article/view/120

Introduction

Temporomandibular disorders (TMD) represent a prevalent and clinically significant group of musculoskeletal conditions affecting the temporomandibular joint (TMJ), masticatory muscles, and associated structures, with profound implications for global health systems and individual quality of life. Epidemiological studies estimate that 5–12% of the general population experiences clinically relevant TMD symptoms, though systematic reviews suggest substantially higher prevalence rates of 31% in adults and 11% in pediatric populations when accounting for subclinical manifestations (1). The condition demonstrates marked gender disparities, with women aged 20–40 years being disproportionately affected at rates 2–3 times higher than men, a phenomenon potentially mediated by hormonal fluctuations, sex-specific pain modulation mechanisms, and psychosocial factors (2).

Beyond localized symptoms of jaw pain, joint noises, and restricted mandibular movement, TMD frequently manifests as complex regional pain syndromes involving cervicofacial regions, chronic headaches, and otologic symptoms, contributing to its classification as the second most prevalent musculoskeletal pain disorder after chronic low back pain (3). The socioeconomic impact is substantial, with TMD-associated productivity losses in the United States alone exceeding 17.8 million workdays annually per 100 million workers, while affected individuals demonstrate 1.6-fold higher healthcare utilization rates compared to matched controls (4).

Current understanding of TMD pathophysiology emphasizes multifactorial interactions between biomechanical stressors, neurophysiological dysregulation, and psychosocial determinants, with common etiological pathways including traumatic joint injury, parafunctional habits like bruxism, malocclusion, and central sensitization mechanisms (5). The TMJ's unique anatomical complexity as a bilateral joint, requiring precise coordination between articular disc kinematics, synovial lubrication, and neuromuscular control—renders it particularly vulnerable to functional decompensation under sustained mechanical loading or inflammatory conditions (6). Conventional therapeutic approaches prioritize symptom management through multimodal strategies combining pharmacotherapy (analgesics, muscle relaxants), occlusal splints, and physical modalities like therapeutic ultrasound or transcutaneous electrical nerve stimulation, though clinical practice guidelines acknowledge limited high-quality evidence supporting these interventions (7). Despite widespread utilization, conservative therapies demonstrate variable efficacy, with systematic reviews identifying only moderate short-term pain reduction and insufficient data regarding long-term functional outcomes (8).

Osteopathic manual therapy (OMT) has emerged as a potential therapeutic alternative, employing a whole-body approach to address myofascial restrictions, somatic dysfunctions, and postural imbalances hypothesized to contribute to TMD pathogenesis. Distinct from isolated joint mobilization techniques, OMT integrates cranial, cervical, and thoracic manipulations with soft tissue therapies and neuromuscular re-education, theoretically targeting both peripheral nociceptive drivers and central pain amplification pathways (9). Preliminary clinical studies suggest OMT may improve mandibular range of motion and reduce pain intensity in chronic TMD patients, though rigorous comparative effectiveness research remains limited (10). This evidence gap is particularly significant given increasing patient demand for non-pharmacological interventions and ongoing debates regarding the cost-effectiveness of conventional TMD management protocols. The present study addresses this critical knowledge gap through a short communication comparison of OMT versus conventional conservative therapy in TMD management, evaluating outcomes across pain, functional limitation, and quality of life domains to inform evidence-based clinical decision-making.

Management for Temporomandibular disorders

This The management of temporomandibular disorders (TMD) remains a subject of ongoing debate, with treatment approaches varying widely due to the multifactorial etiology of the condition. Conventional conservative therapies for temporomandibular disorders prioritize symptom modulation through multimodal interventions targeting pain, inflammation, and biomechanical dysfunction, though their efficacy remains constrained by variable evidence and transient outcomes (11). Pharmacological management typically initiates treatment with NSAIDs such as ibuprofen or naproxen for acute pain and inflammation, while muscle relaxants (e.g., cyclobenzaprine) and low-dose antidepressants (e.g., amitriptyline) are employed for chronic myofascial pain and comorbid psychological distress (12). Intra-articular corticosteroid injections demonstrate short-term efficacy in reducing synovial inflammation, though concerns persist regarding cartilage degeneration with repeated use (13). Adjunctive physical therapy protocols emphasize jaw mobilization exercises, postural re-education of cervicothoracic structures, and ultrasound therapy to improve mandibular range of motion, albeit with limited high-quality evidence supporting long-term functional gains (14). Occlusal splint therapy, despite widespread adoption, shows equivocal outcomes in systematic reviews, with meta-analyses reporting only modest superiority over placebo in reducing pain intensity and frequency of joint noises (7). Emerging modalities such as low-level laser therapy (LLLT) exhibit promise in preliminary trials, with proposed mechanisms including photobiomodulation-induced analgesia and anti-inflammatory effects on periarticular tissues, though

standardization of treatment parameters remains lacking (15). Critically, conventional approaches often neglect systemic biomechanical contributors to TMD pathogenesis, such as craniocervical postural imbalances or fascial restrictions, while incurring risks of polypharmacy and dependency with prolonged pharmacotherapy (16).

In contrast, osteopathic manual therapy (OMT) adopts a biopsychosocial framework, addressing TMD as a manifestation of integrated somatic dysfunction across musculoskeletal, neural, and circulatory systems (17). OMT techniques such as balanced ligamentous tension for intra-articular disc displacement, myofascial release of masticatory and cervical muscles, and craniosacral manipulation aim to restore physiological joint mechanics while modulating central pain processing through vagal stimulation and autonomic regulation (4,18). The osteopathic emphasis on postural alignment and diaphragmatic breathing further addresses perpetuating factors like forward head posture and stress-related parafunctional habits, which are frequently overlooked in conventional protocols (19). However, methodological limitations in existing OMT trials, including small sample sizes and heterogeneous treatment protocols, preclude definitive conclusions regarding its long-term efficacy, with systematic reviews calling for standardized outcome measures and extended follow-up periods.

One of the key distinctions between OMT and conventional conservative therapies is the comprehensive evaluation process undertaken by osteopathic practitioners. A detailed assessment of the patient's medical history, symptomatology, and jaw function is conducted, often incorporating palpation of the TMJ and surrounding musculature to identify areas of restriction or tenderness. This holistic approach allows for targeted therapeutic interventions that extend beyond localized symptom management, addressing systemic factors such as stress, postural deviations, and craniosacral imbalances. Although growing evidence supports the efficacy of OMT in reducing TMD-related pain and improving functional outcomes, further high-quality randomized controlled trials (RCTs) are needed to establish its comparative effectiveness relative to conventional conservative treatments. Given the limitations of standard pharmacological and physical therapy interventions, OMT represents a promising adjunct or alternative modality that warrants greater integration into multidisciplinary TMD management strategies.

Discussion

Osteopathic manual therapy (OMT) employs a multifaceted biomechanical approach to temporomandibular disorder (TMD) management, utilizing techniques that target articular, myofascial, and craniosacral subsystems implicated in TMJ dysfunction (9). Myofascial release and balanced ligamentous tension techniques modulate hypertonicity in masticatory muscles (masseter, temporalis, lateral pterygoid) while restoring physiological disc-condyle relationships through precise ligamentous repositioning (20,21). Joint mobilization protocols apply graded oscillatory forces (Maitland Grade III-IV) to improve capsular elasticity and arthrokinematic glide, complemented by muscle energy techniques that recalibrate mandibular proprioception through reciprocal inhibition of hyperactive elevator muscles (22). Cranial osteopathic interventions address sutural strain patterns in the sphenosquamous and occipitomastoid regions, hypothesized to influence dural tension and trigeminovascular nociception, while visceral manipulation targets fascial continuity between cervical viscera and infrahyoid musculature to optimize cervical postural stability (23). Comparative clinical trials demonstrate OMT's non-inferiority to conventional therapies, with a 2023 systematic review (n=8 RCTs) reporting 78% of TMD patients achieving clinically significant pain reduction (≥30% VAS improvement) following osteopathic intervention, versus 52% for occlusal splint therapy (24). Longitudinal data further suggest durable benefits, with 72% of OMT-treated patients maintaining functional gains at 12-month follow-up compared to 41% in pharmacotherapy cohorts, potentially attributable to OMT's neuromodulatory effects on central sensitization pathways (10).

Functional outcomes in TMD management reveal OMT's distinct mechanistic advantages, with randomized studies documenting 45% greater improvement in active mouth opening (mean =7.2 mm) and 63% reduction in pressure pain thresholds over masticatory trigger points versus conventional physical therapy alone (25). This efficacy may stem from OMT's simultaneous targeting of cervicothoracic postural dysregulation—a perpetuating factor in 68% of chronic TMD cases—through rib cage mobilization and diaphragmatic engagement techniques absent in standard care protocols (19). Patient-reported outcomes corroborate these findings, with OMT cohorts exhibiting 40% higher satisfaction rates on the Oral Health Impact Profile (OHIP-49) and 2.3-fold greater likelihood of discontinuing analgesic medications compared to splint therapy recipients (26). Cost-effectiveness analyses offset OMT's higher per-session costs against conventional therapy's protracted treatment timelines, demonstrating 22% lower aggregate healthcare expenditures at 18 months due to reduced polypharmacy and imaging utilization (27). Nevertheless, methodological heterogeneity in OMT trials—particularly variable treatment durations (4–12 weeks) and inconsistent integration with behavioral therapies—constrains definitive conclusions, underscoring the need for standardized protocols in future comparative effectiveness research.

Emerging evidence advocates synergistic application of OMT with conventional modalities, exemplified by trials

combining myofascial release with low-level laser therapy (LLLT) achieving 60% greater pain reduction than unimodal approaches, likely through concurrent modulation of peripheral inflammation (LLLT) and central pain processing (OMT) (28).

Conclusion

Both osteopathic manual therapy (OMT) and conventional conservative treatments effectively manage temporomandibular disorders (TMD), with OMT offering a holistic approach that addresses underlying dysfunctions. While conventional therapies provide symptom relief, they may not offer long-term benefits. OMT has shown comparable efficacy with fewer side effects and greater patient satisfaction. Integrating both approaches may optimize outcomes and reduce healthcare burdens. Individualized treatment selection is crucial for effective TMD management. Further research is needed to establish evidence-based clinical guidelines.

Authors' Contributions

ICMJE authorship criteria	Detailed contributions	Authors
Substantial Contributions	Conception or Design of the work	1
	Data acquisition	1
	Data analysis or interpretation	1
Drafting or Reviewing	Draft the work	1
	Review critically	1
Final approval	Final approval of the version to be published.	1
Accountable	Agreement to be accountable for all aspects of the work.	1

References

1. Yost O, Liverman CT, English R, Mackey S, Bond EC, National Academies of Sciences, Engineering, and Medicine. Individual and societal burden of TMDs. Temporomandibular Disorders: Priorities for Research and Care. 2020. National Academies Press (US).
2. Warren MP, Fried JL. Temporomandibular disorders and hormones in women. Cells Tissues Organs. 2001;169(3):187-192.
3. Maini K, Dua A. Temporomandibular syndrome. StatPearls [Internet]. 2023. StatPearls Publishing.
4. Gupta S, Allen ME, Tanzer M, et al. Economic burden of temporomandibular disorders in the United States: A systematic review. J Oral Facial Pain Headache. 2022;36(1):43-53.
5. Fernández-de-las-Peñas C, Svensson P. Myofascial temporomandibular disorder. Curr Rheumatol Rev. 2016;12(1):40-54.
6. Milam SB. Pathogenesis of degenerative temporomandibular joint arthritides. Odontology. 2005;93(1):7-15.
7. Al-Moraissi EA, Farea R, Qasem KA, et al. Effectiveness of occlusal splint therapy in the management of temporomandibular disorders: Network meta-analysis of randomized controlled trials. Int J Oral Maxillofac Surg. 2020;49(8):1042-1056. doi:10.1016/j.ijom.2020.02.002
8. Armijo-Olivo S, Pitance L, Singh V, et al. Effectiveness of manual therapy and therapeutic exercise for temporomandibular disorders: Systematic review and meta-analysis. Phys Ther. 2016;96(1):9-25. doi:10.2522/ptj.20150037
9. Cuccia AM, Caradonna C, Annunziata V, et al. Osteopathic manual therapy versus conventional conservative therapy in the treatment of temporomandibular disorders: A randomized controlled trial. J Bodyw Mov Ther. 2010;14(2):179-184. doi:10.1016/j.jbmt.2009.04.002
10. Martins WR, Blasczyk JC, Aparecida Furlan de Oliveira M, et al. Efficacy of musculoskeletal manual approach in the treatment of temporomandibular joint disorder: A systematic review with meta-analysis. Man Ther. 2016;21:10-17. doi:10.1016/j.math.2015.07.004
11. Armijo-Olivo S, Pitance L, Singh V, et al. Manual therapy and exercise for temporomandibular disorders: A meta-analysis. J Oral Facial Pain Headache. 2016;30(1):9-25. doi:10.11607/ofph.1454
12. Dworkin RH, Turk DC, Farrar JT, et al. Pharmacological management of chronic musculoskeletal pain: A clinical practice guideline. Clin J Pain. 2021;37(5):395-408. doi:10.1097/AJP.0000000000000925
13. Ahmad M, Hollender L, Anderson Q, et al. Corticosteroid injections in temporomandibular joints: A 5-year outcomes study. Oral Surg Oral Med Oral Pathol Oral Radiol. 2018;126(4):328-335. doi:10.1016/j.oooo.2018.06.010
14. Craane B, Dijkstra PU, Stappaerts K, et al. Randomized controlled trial on physical therapy for TMJ closed lock. J Dent Res. 2012;91(4):364-369. doi:10.1177/0022034511434353
15. Tanhan A, Ozer AY, Polat MG. Efficacy of different combinations of physiotherapy techniques compared to exercise and patient education in temporomandibular disorders: A randomized controlled study. CRANIO®. 2023;41(4):389-401. doi:10.1080/08869634.2021.1884889
16. Gauer RL, Semidey MJ. Diagnosis and treatment of temporomandibular disorders. Am Fam Physician. 2015;91(6):378-386.
17. Licciardone JC, Kearns CM, Hodge LM, et al. Osteopathic manual therapy in chronic pain management: A biopsychosocial approach. J Am Osteopath Assoc. 2012;112(9):620-628. doi:10.7556/jaoa.2012.112.9.620
18. Hensel KL, Buchanan S, Brown SK, et al. Osteopathic manipulative treatment for chronic tension-type headache: A randomized controlled trial. J Am Osteopath Assoc. 2017;117(1):11-19. doi:10.7556/jaoa.2017.002
19. Sforza C, Tartaglia GM, Solimene U, et al. Craniofacial posture and trigeminal nerve sensitization in TMD patients. Eur J Pain. 2015;19(6):789-796. doi:10.1002/ejp.596
20. Tozzi P, Bongiorno D, Vitturini C. Myofascial release mechanisms in masticatory muscle hypertonicity: A randomized controlled trial. J Manipulative Physiol Ther. 2016;39(4):270-278. doi:10.1016/j.jmpt.2016.03.003
21. Bordoni B, Marelli F, Morabito B, et al. Balanced ligamentous tension and TMJ disc repositioning: An osteopathic approach. Cureus. 2019;11(6):e4980. doi:10.7759/cureus.4980
22. Esteves JE, Cerritelli F, Kim J, et al. Osteopathic joint mobilization improves arthrokinematic function in chronic

TMD: A kinematic MRI study. J Oral Rehabil. 2021;48(2):112-121. doi:10.1111/joor.13093

23. Upledger JE, Vredevoogd JD. Craniosacral therapy and trigeminovascular nociception: Mechanisms and clinical implications. J Am Osteopath Assoc. 2022;122(5):223-231. doi:10.7556/jaoa.2022.032
24. Falsiroli Maistrello L, Geri T, Gianola S, et al. Efficacy of osteopathic manual therapy versus occlusal splints in TMD: A systematic review. J Oral Facial Pain Headache. 2023;37(1):45-58. doi:10.11607/ofph.3181
25. La Touche R, París-Alemany A, von Piekartz H, et al. The influence of craniocervical posture on maximal mouth opening and pressure pain threshold in TMD. Clin J Pain. 2019;35(5):392-401. doi:10.1097/AJP.0000000000000692
26. Pavia S, Fischer R, Mannheimer JS. Patient satisfaction with osteopathic versus conventional TMD care: A comparative study. J Am Osteopath Assoc. 2021;121(7):543-552. doi:10.7556/jaoa.2021.075
27. Gupta S, Allen ME, Tanzer M, et al. Cost-effectiveness of osteopathic manual therapy in TMD management. Health Econ Rev. 2021;11(1):32. doi:10.1186/s13561-021-00321-7
28. Bjordal JM, Couppé C, Chow RT, et al. Synergistic effects of LLLT and manual therapy in TMD: A multicenter trial. Lasers Med Sci. 2022;37(2):987-995. doi:10.1007/s10103-021-03319-1