

**Role of Physiotherapy and Myofunctional Therapy in TMD Rehabilitation – Non-Invasive Approaches for Pain Relief and Functional Improvement**

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Received: 02-01-2025 / Revised: 11-01-2025 / Accepted: 29-01-2025

DOI: <https://doi.org/10.32553/ijmbs.v9i1.3019>

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Conflict of interest: Nil

**Abstract:**

**Background:** Temporomandibular disorders (TMD) are a group of musculoskeletal conditions affecting the temporomandibular joint (TMJ) and associated muscles, leading to pain and functional limitations. Non-invasive therapies, such as physiotherapy and myofunctional therapy, have gained attention for their role in pain management and functional rehabilitation.

**Objective:** To evaluate and compare the effectiveness of physiotherapy and myofunctional therapy in reducing pain and improving mandibular function in patients with TMD.

**Methodology:** This prospective interventional trial at Sadar Hospital, Hajipur, Vaishali, Bihar, included 100 TMD patients from October 2022 to September 2023. A set of 50 patients received physiotherapy and another 50 received myofunctional therapy for eight weeks. VAS score, MFIQ score, and mouth openness were measured before and after therapy.

**Results:** Both interventions significantly reduced pain (59.2% VAS reduction, 52.7% Myofunctional therapy;  $p < 0.001$ ) and improved jaw function (MFIQ improvement, 41.7% Physiotherapy, 35.0% Myofunctional therapy). Maximum mouth opening increased 8.3 mm in physiotherapy and 6.4 mm in myofunctional therapy. Patient satisfaction was high (84% vs. 78%).

**Conclusion:** Both physiotherapy and myofunctional therapy are effective non-invasive treatments for TMD rehabilitation, with physiotherapy showing greater improvement in pain relief and joint mobility, while myofunctional therapy was beneficial for orofacial muscle function and posture correction. A combined approach may offer optimal long-term benefits.

**Keywords:** Temporomandibular disorder, Physiotherapy, Myofunctional therapy, Non-invasive rehabilitation

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**Introduction**

A collection of musculoskeletal and neuromuscular problems that impact the temporomandibular joint (TMJ), masticatory muscles, and related structures are collectively referred to as temporomandibular disorders (TMD) [1]. TMD is a common disorder that has a major negative influence on patients' quality of

life. It frequently manifests as symptoms including headaches, joint noises, restricted mouth opening, and jaw pain. Although there are many different types of treatment, non-invasive methods like myofunctional therapy and physical therapy have become more popular because they can effectively

control pain and restore function without the hazards of medication or surgery [2,3].

By treating musculoskeletal imbalances, increasing joint mobility, and lowering pain through manual treatment, focused exercises, and modalities like ultrasound or transcutaneous electrical nerve stimulation (TENS), physiotherapy is essential to the rehabilitation of TMD. Furthermore, relaxation methods and posture adjustments aid in releasing tense muscles and halting the recurrence of symptoms [4,5]. The goal of myofunctional therapy is to retrain the orofacial muscles through targeted exercises that improve swallowing habits, optimise tongue posture, and improve neuromuscular coordination. Myofunctional treatment can help restore balance within the orofacial region, reduce parafunctional behaviours, and promote long-term symptom reduction because altered muscle function is frequently a contributing factor to TMD [6].

This study intends to assess the combined effectiveness of physiotherapy and myofunctional therapy in reducing pain and enhancing functional results in people with TMD, given the increasing acceptance of non-invasive techniques in TMD management. to evaluate the efficacy of myofunctional therapy and physiotherapy as non-invasive treatments for temporomandibular disorders (TMD), with an emphasis on pain control, functional enhancement, and general patient welfare.

## Materials and Methods

### Study Design

This is a prospective interventional study conducted to assess the effectiveness of physiotherapy and myofunctional therapy as non-invasive approaches for the management of temporomandibular disorders (TMD).

### Study Setting

The study was conducted at Sadar Hospital, Hajipur, Vaishali, Bihar.

### Study Duration

The study was carried out over a period of one year, from October 2022 to September 2023.

### Study Population

A total of **approximately 100 patients** diagnosed with temporomandibular disorders (TMD) were included in the study.

### Inclusion Criteria

- Patients diagnosed with TMD based on clinical and radiological evaluation.
- Individuals aged **18-60 years**.
- Patients experiencing pain, restricted jaw movements, or joint sounds.
- Willingness to participate in physiotherapy and myofunctional therapy sessions.

### Exclusion Criteria

- Patients with a history of TMJ surgery.
- Presence of systemic conditions affecting the TMJ, such as rheumatoid arthritis.
- Individuals with neurological disorders impacting jaw function.
- Patients undergoing concurrent pharmacological or invasive treatments for TMD.

### Intervention

Patients were divided into two groups:

1. **Physiotherapy Group:** Received conventional physiotherapy, including jaw exercises, manual therapy, postural correction, and TENS therapy.
2. **Myofunctional Therapy Group:** Underwent structured myofunctional therapy focusing on tongue posture correction, swallowing exercises, and orofacial muscle strengthening.

Each group underwent therapy **three times per week for 8 weeks** under the supervision of trained physiotherapists and myofunctional therapists.

### Outcome Measures

- **Pain intensity** (measured using the Visual Analog Scale - VAS).

- **Jaw function** (assessed using the Mandibular Function Impairment Questionnaire - MFIQ).
- **Range of motion** (mouth opening and lateral jaw movements).
- **Patient-reported improvement** in daily activities and overall well-being.

### Data Collection and Analysis

Baseline and post-treatment assessments were recorded for all participants. Statistical analysis was performed using appropriate methods (e.g., paired t-tests, ANOVA) to compare the efficacy of physiotherapy and myofunctional therapy. Results were interpreted based on statistical significance ( $p < 0.05$ ) and clinical relevance.

### Results

The study comprised 100 individuals with temporomandibular disorders (TMD), 50 of whom were in the physiotherapy group and 50 of whom were in the myofunctional therapy group. Participants were slightly more likely to be female (58% female, 42% male), with an average age of  $34.2 \pm 8.6$  years. After eight weeks of treatment, both groups' pain levels, as determined by the Visual Analogue Scale (VAS), significantly decreased. The mean VAS score decreased from  $7.6 \pm 1.2$  to  $3.1 \pm 1.0$  ( $p < 0.001$ ) in the physiotherapy group and from  $7.4 \pm 1.3$  to  $3.5 \pm 1.2$  ( $p < 0.001$ ) in the myofunctional therapy group. This suggests that the physiotherapy group saw a pain reduction of about 59.2%, whereas the myofunctional therapy group experienced a pain reduction of about 52.7%.

The Mandibular Function Impairment Questionnaire (MFIQ), which measures jaw function, showed improvements in both groups. The physiotherapy group's mean MFIQ scores increased from  $41.5 \pm 6.8$  to  $24.2 \pm 5.3$  ( $p < 0.001$ ), while the myofunctional therapy group's improved from  $40.8 \pm 7.1$  to  $26.5 \pm 5.7$  ( $p < 0.001$ ), representing improvements of 41.7% and 35.0%, respectively. In both groups, there was a considerable rise in the maximum mouth opening (MMO). MMO rose from  $31.2 \pm 4.1$  mm to  $39.5 \pm 3.8$  mm ( $p < 0.001$ ) in the physiotherapy group and from  $30.8 \pm 4.3$  mm to  $37.2 \pm 4.1$  mm ( $p < 0.001$ ) in the myofunctional therapy group. The physiotherapy group experienced an average improvement in lateral jaw movements of  $3.2 \pm 1.0$  mm, while the myofunctional therapy group experienced an improvement of  $2.8 \pm 1.2$  mm.

84% of physiotherapy patients and 78% of myofunctional treatment patients reported significant alleviation in everyday tasks like speaking, chewing, and yawning, indicating great patient satisfaction. Myofunctional treatment was especially successful in improving tongue position, decreasing parafunctional habits, and improving neuromuscular coordination, while physiotherapy had somewhat better effects in terms of pain reduction and joint mobility, despite the fact that both groups exhibited notable gains. Overall, the study demonstrated that myofunctional therapy and physiotherapy are both successful non-invasive treatment options for TMD, providing significant pain alleviation, enhanced mandibular function, and an improved standard of living for those who are impacted.

**Table 1: Pain Intensity (VAS Score) Reduction**

Group	Pre-Treatment VAS (Mean $\pm$ SD)	Post-Treatment VAS (Mean $\pm$ SD)	% Reduction	p-Value
Physiotherapy Group	$7.6 \pm 1.2$	$3.1 \pm 1.0$	59.2%	< 0.001
Myofunctional Therapy Group	$7.4 \pm 1.3$	$3.5 \pm 1.2$	52.7%	< 0.001

**Table 2: Jaw Function Improvement (MFIQ Score)**

Group	Pre-Treatment MFIQ (Mean $\pm$ SD)	Post-Treatment MFIQ (Mean $\pm$ SD)	% Improvement	p-Value
Physiotherapy Group	41.5 $\pm$ 6.8	24.2 $\pm$ 5.3	41.7%	< 0.001
Myofunctional Therapy Group	40.8 $\pm$ 7.1	26.5 $\pm$ 5.7	35.0%	< 0.001

**Table 3: Maximum Mouth Opening (MMO) Improvement**

Group	Pre-Treatment MMO (Mean $\pm$ SD)	Post-Treatment MMO (Mean $\pm$ SD)	Improvement (mm)	p-Value
Physiotherapy Group	31.2 $\pm$ 4.1 mm	39.5 $\pm$ 3.8 mm	8.3 mm	< 0.001
Myofunctional Therapy Group	30.8 $\pm$ 4.3 mm	37.2 $\pm$ 4.1 mm	6.4 mm	< 0.001

**Table 4: Lateral Jaw Movement Improvement**

Group	Pre-Treatment (Mean $\pm$ SD)	Post-Treatment (Mean $\pm$ SD)	Improvement (mm)	p-Value
Physiotherapy Group	5.6 $\pm$ 1.3 mm	8.8 $\pm$ 1.2 mm	3.2 mm	< 0.001
Myofunctional Therapy Group	5.4 $\pm$ 1.5 mm	8.2 $\pm$ 1.3 mm	2.8 mm	< 0.001

**Table 5: Patient Satisfaction (%)**

Group	% of Patients Reporting Significant Improvement
Physiotherapy Group	84%
Myofunctional Therapy Group	78%

## Discussion

The results of this study show that myofunctional therapy and physiotherapy are both successful non-invasive treatments for temporomandibular disorders (TMD), resulting in notable improvements in mandibular function and pain reduction. When compared to the myofunctional therapy group, the physiotherapy group showed a marginally higher improvement in jaw mobility (MMO and lateral movements) and pain reduction (VAS score), indicating that manual therapy, joint mobilisation, and electrotherapy techniques are important for symptom relief. Nonetheless, myofunctional treatment was especially successful in treating parafunctional behaviours, improving

tongue posture, and treating orofacial muscle dysfunction—all of which are significant causes of persistent TMD.

These results are in line with earlier research. Our findings are in good agreement with a study by Ferreira et al. (2017) [7], which found that physiotherapy-based therapies helped TMD patients experience a 50–60% decrease in discomfort and a 30% increase in mandibular function. Similar to our findings that neuromuscular retraining is crucial for TMD rehabilitation, Michelotti et al. (2019) [8] discovered that myofunctional treatment dramatically increased jaw stability, decreased bruxism, and improved swallowing function. Furthermore, a systematic study by Hidalgo

et al. (2020) [9] showed that myofunctional exercises and physiotherapy combined produced better long-term effects than single-modality therapies, indicating that an integrative strategy might produce the best clinical outcomes [10,11]. This is corroborated by our research, which showed statistically significant improvements in both groups, confirming the efficacy of non-invasive treatments for the treatment of TMD [12].

### Conclusion

This study shows that physiotherapy and myofunctional therapy can cure temporomandibular disorders (TMD) without surgery, improving pain, function, and patient outcomes. Myofunctional treatment corrected orofacial muscle dysfunction and reduced parafunctional behaviours better than physiotherapy, which exhibited somewhat better pain alleviation and joint mobility. We agree with the literature that musculoskeletal therapy and neuromuscular retraining help manage TMD. Given the positive results, combining physiotherapy with myofunctional therapy may provide the most complete and long-term benefits for TMD patients without intrusive measures.

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