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Original Article

Early Self-Physiotherapy Combined with Conservative Therapy Improves Quality of Life in Myofascial Pain: a Single-Blinded Randomized Controlled Trial

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ABSTRACT

Objective: To compare the mean scores of quality of life in myofascial pain patients treated with conservative therapy alone versus conservative therapy with early self-physiotherapy.
Study Design: Single-blinded randomized controlled trial. Trial number (ISRCTN12874881).
Place and Duration of Study: Fatima Memorial Hospital, Lahore, Pakistan, from Jul 2021 to Aug 2022.
Methodology: A total of 62 patients diagnosed with myofascial pain DC-TMD Group 1(Diagnostic Criteria for Temporomandibular Disorders Group) were randomly allocated using a lottery method into two groups: Group A (conservative therapy only) and Group B (conservative therapy with early self-physiotherapy). Written informed consent was taken. The QOL was assessed using a validated QOL index before and after four weeks of therapy.
Results: A total of 62 participants were included in this study. Pre-intervention mean score in Group A was 2.53 ± 0.65, which improved to 2.06 ± 0.74 post-intervention. Similarly, Group B showed an improvement from 2.28 ± 0.74 pre-intervention to 1.48 ± 0.75 post-intervention. Both the groups had statistically significant difference pre and post interventions as *p* value <0.001. There was statistically significant difference seen among the study group at pre intervention as *p* value =0.003 while after intervention there was not statistically significant difference seen as *p*-value 0.165Conclusion: Early self-physiotherapy combined with conservative therapy significantly improves the QOL in patients with myofascial pain.

Keywords: Conservative Therapy, Myofascial Pain, Quality of Life, Self-Physiotherapy, Temporomandibular Disorders.

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INTRODUCTION

Temporomandibular disorder (TMD) is a term used for conditions that involve masticatory muscles, the temporomandibular joint (TMJ), and associated structures, leading to pain, limited function, and reduced quality of life.[1,2] TMD is the second most common cause of orofacial pain after dental pain. Its morbidity includes joint sounds, pain, and limited mouth opening with a prevalence of 27% to 76% among dental patients.[3]

The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) provides an evidence-based standardized diagnostic framework. It is a dual-axis system: Axis I focuses on the physical diagnosis of TMD, and Axis II assesses the psychosocial status, including distress and pain-related disability.[4] Axis I categorizes TMD into groups: Group I: Muscle disorders, Group II: Internal derangement of the TMJ, Group III: Inflammatory joint conditions. Group I includes myofascial pain (Ia) and myofascial pain with limited mouth opening (Ib). Myofascial pain, being the most common muscle disorder, affects 10% of the general population, more frequently women than men.[5] It is characterized by dull, aching pain aggravated by jaw function. If untreated, it can significantly impair oral health and reduce quality of life.[6]

Literature showed myofascial pain management, including home-based care, pharmacotherapy, physical therapy, self-physiotherapy, stress reduction, psychotherapy, and occlusal appliances.[6] Conservative instructions include eating soft foods, avoiding extreme jaw movements (e.g., clenching, nail biting), and maintaining jaw rest. Self-physiotherapy—comprising isometric, isotonic, coordination, and stretching exercises—is typically introduced in later stages, over 4–6 weeks.[6]

Considering the effect of Myofascial pain on quality of life, can self-physiotherapy be used early in the management of such patients?

Previous studies suggests the advantages of combining therapies. Michelotti *et al*. reported a 77% success rate with education plus home exercises versus 57% with education alone.[7] De Laat *et al*. found counseling plus physical therapy improved pain and

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function, with 61% and 57% pain relief in 4- and 6-week therapy groups.[8] Resende *et al*. showed conservative therapies improved WHOQOL and OHIP-14 scores in 30 days.[9]

Despite many studies on TMD, limited evidence addresses early changes in quality of life in DC/TMD Group I patients.[10] Oral health impact profile (OHIP-14), Axis 2 DC/TMD, Short form health survey (SF-36, SF-12),14 HADS, WHOQOL questionnaire, EQ-5D have been used to assess QOL in TMD patients. Nakayama *et al.*, specifically developed a validated QOL index (Cronbach's alpha 0.950) for TMD patients.[1]

This randomized controlled trial aims to compare improvement in quality of life in patients receiving conservative therapy alone versus conservative therapy with early self-physiotherapy, using the Nakayama QoL Index.[1] Results of this research will add evidence in the literature with regard to improvement or otherwise in QOL of patients with DC/TMD Muscle Disorders.

METHODOLOGY

Approval from the Institutional Review Board (IRB# FMH-06-2019-IRB-636-M) on November 10, 2020 was obtained. The purpose of the study was explained to each participant, and written informed consent was obtained in accordance with ethical principles, including autonomy, beneficence, non-maleficence, and justice, before enrolling in the study. This randomized controlled trial (RCT) (ISRCTN12874881) was conducted at the Department of Oral and Maxillofacial Surgery, Fatima Memorial Hospital, Lahore, Pakistan, from July 2021 to August 2022. The sample size was determined using the Open Epi sample size calculator, with a confidence interval of 95% and a margin of error of 5%. The mean of quality of life for Group A were 214 ± 16, and for Group B, they were 204 ± 12[8]. The estimated sample size required for the study is 62 patients, with 31 patients allocated to each group.8 Patients diagnosed with myofascial pain (DC-TMD Axis 1 Group-1) were randomly allocated into two groups using the lottery method. Follow-up was done after 4 weeks of initial intervention. The study was conducted over a period of six months after approval of the synopsis.

Inclusion Criteria: Patients diagnosed with myofascial pain (DC-TMD Axis 1 Group 1 only), both genders (male and female), aged between 20 and 40 years, and dentate patients.

Exclusion Criteria: Patients having systemic health disorders (cardiovascular, neurological, respiratory, endocrine, systemic musculoskeletal disorders, etc.), known psychiatric or psychological conditions, a history of TMJ surgery or condylar fractures, neuropathic pain, deep bite, missing data for any variable, prior treatment for myofascial pain, and refusal to participate in the study.

Patients meeting the inclusion criteria were recruited from the Outpatient Department of Oral and Maxillofacial Surgery, Fatima Memorial Hospital, Pakistan. Demographic data (name, age, gender) were recorded. Clinical examination, diagnosis, and treatment planning were conducted by a single surgeon to ensure consistency. Group A received conservative instruction only, while Group B received physiotherapy along with conservative instructions, three times daily for four weeks. Oral health-related quality of life (OHRQoL) was assessed using a validated Quality of Life Index for TMD patients at baseline and after four weeks. Follow-up assessments were conducted at four weeks post-treatment to evaluate treatment effectiveness. Patient flow can be seen in Table I. Weekly telephonic reinforcement was done to minimize bias and improve adherence.

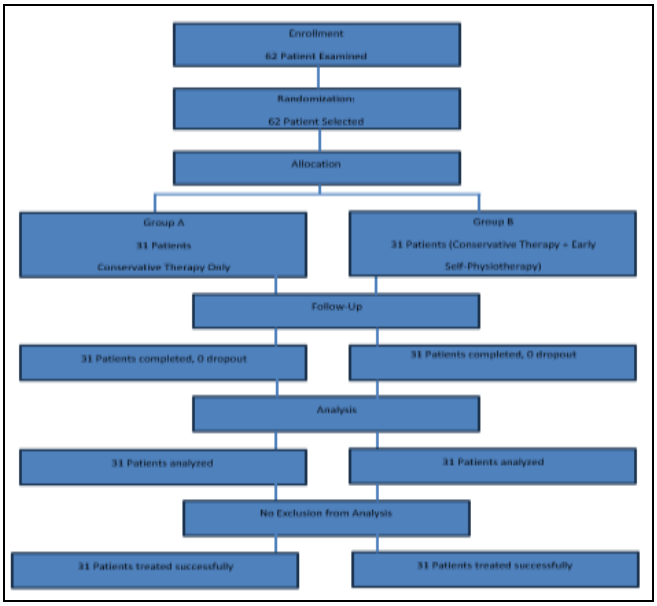


Figure: Patient Flow Diagram

Statistical Package for Social Sciences (SPSS) version 25 was used for data entry and data analysis. Normality of the outcome variable, Quality of Life Score Before and After Intervention, was assessed using the Shapiro–Wilk test, which showed that the

pre-intervention and post-intervention values were normally distributed. Demographic data is represented using descriptive statistics. Data were stratified based on treatment groups (conservative therapy vs. conservative therapy with physiotherapy). Chi-square test was applied for Gender distribution by treatment Group A & B. A paired sample t-test was used to compare pre- and post-treatment effects within each group, while an independent sample t-test was applied to compare differences between the groups. The *p*-value ≤0.05 was considered statistically significant.

RESULTS

A total of 62 participants were included in the study, comprising 36 females (58.3%) and 26 males (41.7%). Mean age was 27.65±8.22 years. However, Group A consisted of 31 participants, 15 females (24.2%), 16 males 25.8%), while Group B also had 31 participants, 21 females (33.9%), 10 males (16.1%). The gender distribution between the two groups was not statistically significant (p = 0.198). Mean age of Group A patients was 30.00±7.90 years and group B was 25.30±7.98 years. The difference in mean age was statistically significant as p value 0.026 shown in Table-I. Furthermore,mean age of female participants was 27.71 ± 7.93 years, while the mean age of male participants was 27.56 ± 8.79 years. The difference in mean age between genders was not statistically significant (p = 0.944).In Table II, regarding outcomes, the pre-intervention mean score in Group A was 2.53 ± 0.65, which improved to 2.06 ± 0.74 post-intervention. Similarly, Group B showed an improvement from 2.28 ± 0.74 pre-intervention to 1.48 ± 0.75 post-intervention. Both the groups had statistically significant difference pre and post interventions as p value <0.001. There was statistically significant difference seen among the study group at pre intervention as p value = 0.003 while after intervention there was not statistically significant difference seen as p value 0.165.

DISCUSSION

Temporomandibular disorders (TMD), particularly myofascial pain, are well recognized for their impact on function, psychosocial well-being, and overall quality of life (QoL).[1,4] In the present randomized controlled trial, both conservative therapy alone and conservative therapy combined with early self-physiotherapy resulted in significant improvement in QoL scores after four weeks. However, patients receiving additional self-physiotherapy showed greater improvements, highlighting the potential value of early self-physiotherapy intervention in enhancing outcomes.

Table-I: Demographic characteristics of both groups (n=62)

Variables	Group 1 (n=31)	Group 2 (n=31)	Total	*p*-value
Mean Age (Years)	30.00±7.90	25.30±7.98	27.65±8.22	0.026
Gender				
Male	16(51.6%)	10(32.3%)	26(41.9%)	0.198
Female	15(48.4%)	21(67.7%)	36(58.1%)	

Table-II: Comparison of Quality of Life Score before and After Intervention (n=62)

Group	Pre-Intervention (Mean±SD)	Post-Intervention (Mean±SD)	*p*-value
A (n=31)	2.53±0.65	2.06±0.74	<0.001◊
B (n=31)	2.28±0.74	1.48±0.75	<0.001◊
p-value	0.003*	0.165*	-

◊ Paired sample t test ,
** Independent sample t test*

The findings align with previous studies that emphasized the benefits of multimodal conservative approaches. Michelotti *et al.* compared patient education alone with a regimen combining education and home exercises, demonstrating higher success rates in the latter group. Similarly, De Laat *et al.* reported significant improvements in pain and jaw function following counseling and physical therapy, irrespective of therapy duration. These studies, together with the present trial, concluded exercises enhances treatment effectiveness beyond passive conservative instructions.[7,8]

The significant improvement in QoL in both groups confirms the established efficacy of conservative therapy, such as patient education, counseling, habit modification, and soft diet, in managing myofascial pain. However, the superior outcomes in the self-physiotherapy group suggest that the addition of structured isometric and coordination exercises augments symptom control, potentially by reducing muscle hyperactivity, improving blood flow, and enhancing neuromuscular coordination.[2,6] Likewise, De Resende *et al.* showed that short-term conservative therapies, including counseling and physical therapy, improved QoL and sleep quality, highlighting the multidimensional benefits of such interventions[9]. Viana *et al.* demonstrated that structured physical therapy protocols improved QoL across multiple SF-36 domains, including functional capacity, vitality, and mental health, compared to routine dental care[10].

Gender-related differences observed in the present study, where male participants showed significantly greater QoL improvement after

intervention, are noteworthy. Previous studies have reported that TMD and myofascial pain disproportionately affect women, possibly due to hormonal, psychological, and behavioral factors.[11] However, differential responses to therapy remain less well studied. Our findings observed greater QoL improvement in male participants; further research is needed to confirm gender differences. Prior literature indicates sex-related differences in TMD symptoms and prevalence, but results on differential treatment response are mixed and suggests further study.[12]

These findings align with systematic reviews and meta-analyses that support exercise and rehabilitation approaches for painful TMD, showing improvements in pain, range of motion and function13,14. The observed short-term benefit supports introducing structured early self-physiotherapy, consistent with evidence favoring home-based and telerehabilitation exercise programs for TMD.[15,16] Manual therapy directed at the cervical spine and local tissues may further augment outcomes when combined with exercise.[17] Randomized trials comparing dry needling, manual therapy and exercise have shown varied but generally positive short-term effects on pain and QoL, underlining the value of multimodal conservative approaches.[18]

The present study also contributes to the limited body of literature on early self-physiotherapy interventions in TMD. Nakayama *et al.* developed and validated a TMD-specific QoL index, which was employed in this study for outcome assessment[1]. The observed improvements in scores reinforce its sensitivity to detecting short-term therapeutic effects. Importantly, while existing research largely evaluates long-term outcomes of physiotherapy (often over 3–6 months), our study demonstrates measurable QoL improvement within just four weeks, underscoring the short-term efficacy of early exercise protocols.[7]

Future research should therefore explore multimodal comparisons, longer-term outcomes, and adherence-enhancing strategies. Moreover, examining psychosocial variables in greater depth may provide insights into why certain subgroups, such as males in this study, respond more favorably to physiotherapy interventions. Such work would contribute to tailoring patient-centered management protocols that optimize both functional and psychosocial recovery.

In summary, this study demonstrated that both conservative therapy alone and conservative therapy with early self-physiotherapy significantly improve quality of life in patients with myofascial pain. However, the addition of self-physiotherapy provided superior benefits, supporting its recommendation as a first-line adjunctive therapy. These findings are consistent with existing literature and add novel evidence on the short-term effectiveness of early exercise interventions, thereby contributing to the ongoing evolution of conservative TMD management strategies.

LIMITATIONS OF STUDY

Despite the strengths, certain limitations must be acknowledged. First, the study compared only two management modalities—conservative therapy and conservative therapy with self-physiotherapy—whereas other established interventions, such as occlusal splints, pharmacotherapy, and behavioral therapy, were not included. Second, the follow-up period was restricted to four weeks. Given the chronic and often fluctuating nature of myofascial pain, longer follow-up is necessary to determine the durability of improvements. Third, while reinforcement calls were employed to enhance compliance, self-reported adherence to physiotherapy exercises could not be objectively verified, which may have influenced outcomes.

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CONCLUSION

Conservative therapy combined with early self-physiotherapy has better effect on improvement of quality of life of patient after 4 weeks in terms of psychosocial and functional aspect of the individual's life. Conservative therapy only and conservative therapy with addition of early self-physiotherapy both are effective in management of myofascial pain in temporomandibular disorders. Hence we should recommend early self-physiotherapy with conservative therapy as it has significant effect on improvement of quality of life.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

IS & AA: Data acquisition, data analysis, critical review, approval of the final version to be published.

MI & AS: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

YE & MN: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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