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Comparative Effects of Rocabado Exercises and Myofascial Release on Pain in Patients with Temporomandibular Joint Dysfunction

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ABSTRACT

Background: The study was conducted to compare the effects of Rocabado exercises and myofascial release technique (MFR) in minimizing pain in patients with TMJ (Temporomandibular Joint) dysfunction. **Method:** A randomized clinical trial was conducted on a sample of 30 patients recruited by purposive sampling technique from physiotherapy and dental OPDs of Madinah Teaching Hospital and Allied Hospital Faisalabad were divided into two groups by lottery method. Ultrasound therapy and simple jaw exercises were given as baseline treatment to both groups. Group A received Rocabado 6X6 exercises while Group B received MFR at temporomandibular joint area thrice a week for 4 weeks. Before and after treatment readings were taken from each participant using Numeric Pain Rating Scale (NPRS). Results were analyzed through SPSS version 20. **Results:** The study findings suggested that outcome measure had not shown statistically remarkable difference upon comparison between two groups. The p value for NPRS turned out to be greater than 0.05 which suggested non-significant differentiation between two groups. **Conclusion:** The outcome of this study had drawn to conclude that both Rocabado Exercises and Myofascial Release Technique were statistically significant in decreasing pain in subjects with Temporomandibular Joint Dysfunction Syndrome (TMJD).

INTRODUCTION

Temporomandibular Joint Dysfunction (TMJD) is an umbrella term circumscribing group of illnesses of both masticatory system and the joint itself or both. The condition refers to the pain around the TMJ or restricted joint mobility[(1)]. The dysfunction of Temporomandibular joint is the 2nd most prevalent musculoskeletal impairment after chronic low back pain. TMJD affects the stomatognathic system as a whole which functions to serve in breathing, speaking, mastication and assuming normal head posture in relation of the body. [(2)].

Internal disc derangement, traumatic circumstances, inflammation in the capsular region, joint hypermobility, and osteoarthritis are some of the intra-articular causes of TMD. [(3)]. The primary cause of TMJD is disc displacement from its normal position. [(4)].

According to a study conducted in India, TMD is prevalent among 20-85% of population with an incidence of more in females (6.8%) than in males (2.8%). The most affected age group is middle-aged people i.e. 20-40 years [(5)].

Rocabado approach encompasses non-thrust TMJ joint manipulation, together with Rocabado 6x6 techniques to address TMJ dysfunction. Rocabado 6x6 exercise protocol sketches to lessen the effects of pain and ameliorates the chore of masticatory muscles [(5)].

Myofascial Release involves the utilization of low load, prolonged stretch to the myofascial complex in order to reinstate optimal muscle length and alleviate pain and enhance function [(6)]. It can be grouped as an integrated direct and indirect manual technique [(7)]. It involves compression at TMJ and repeated palpations of soft tissue which eventually transmutes tightness into

looseness [8].

Rationale OF Study

In recent years, the prevalence of temporomandibular joint dysfunction has markedly increased in our community but there is quite less clinical practice on this specific area. Although various conservative treatments are available in literature to optimize TMJ functioning but there is scarcity in literature to seek comparative effects of two treatment methods while addressing TMJD. Through this visible literature gap, this study will seek the comparative effects of Rocabado exercises and Myofascial release technique and will help the therapists in future while choosing appropriate treatment method for TMJ dysfunctioning.

MATERIALS AND METHODS

Study design was randomized clinical trial. It was conducted at Allied Hospital and Madinah Teaching Hospital Faisalabad. Duration of study was four months, spanning from February 2024 to May 2024. Sample size was calculated using Open Epi Tool and the estimated sample turned out to be 24 and after adding 20% dropout ratio, it became 30. Sampling technique used in this study was convenient sampling technique. Two groups were formulated with fifteen participants in each group. Randomization was done to allocate participants in both groups by using chit and draw method. All the participants with even numbered chits were made to enter in group A while all the participants with odd numbered chits were made to enter in group B.

Inclusion Criteria

Age eighteen to thirty years[6], mild to moderate TMJD using fonseca questionnaire, decreased or restricted mouth opening, mild to moderate pain on NPRS (3-6), both male and female participants[9] and willingness to participate.

Exclusion Criteria

Any recent surgery[6], unhealed fracture of mandible, severe osteoporosis of temporomandibular joint[9], TMJ hypermobility and advanced diabetes.

Data Collection Procedure

This study was a single-blinded randomized clinical trial. Participants with temporomandibular joint dysfunction were screened using fonseca anamnestic index (FAI) questionnaire and then the participants who fulfilled the inclusion criteria were recruited into the study. A consent form was made to sign by all the participants which portrayed their willingness to be the part of this study. Then these participants were cleaved into two groups using chit and draw method where both groups were interventional. Group A was treated with a set of six exercises named as Rocabado Exercises while group B was treated with myofascial release technique. Measurements were taken at baseline and post-treatment (at 4th week). Treatment was given thrice a week over the period of four weeks i.e. 12 sessions.

Group A (Rocabado Exercises)

- First of all, the participants received therapeutic ultrasound (pulsed mode, 1 MHz, 1.5 W/cm^2, 5 minutes) and jaw exercises (5 repetitions and two sets) as a baseline treatment.
- Then they were instructed all the six Rocabado exercises, the first one was rest position of tongue in which the subject had to put lips closer with teeth at minimal distance with anterior part of tongue against the hard palate. Then the subject had to do nasal breathing.
- Then the subject was commanded to pull the shoulder backward and downward by pulling together the shoulder blades.
- The further instruction was to clasp the hands behind the neck in order to stabilize cervical spine. Then keeping the head straight, patient was asked to perform nodding action.
- The next instruction given was to nod the head, perform posterior glide and superior stretch all at once to facilitate axial extension of neck.
- Then again the subject was instructed to assume rest position of tongue and observe temporomandibular joint by placing index fingers over it. Then he was instructed to perform chewing action by not leaving tongue from its resting position and observe the forward motion of condyle.
- The last instruction was to observe the rest position of tongue and grasp the chin. Then he was instructed to apply minimal resistance in all four directions of movement.
- Each of the six exercises was performed six times with five seconds hold and the total treatment session lasted for 15 minutes.

Group B (Myofascial Release)

- First of all, the participants received therapeutic ultrasound (pulsed mode, 1 MHz, 1.5 W/cm^2, 5 minutes) and jaw exercises (5 repetitions and two sets) as a baseline treatment.
- The therapist grasped the subject's mandible and then applied an anterosuperior force over the masseter muscle until the point of tissue resistance.
- Then the therapist slowly released the muscle by keeping the force steady in either direction.
- Therapist performed the action until the barrier was released.
- Same action was performed over the area of temporalis muscle.
- Five repetitions with 2 seconds rest interval were performed for each muscle and treatment session lasted for fifteen minutes.

Consent taking

Participants were asked for their written an informed

consent. The confidentiality of data was guaranteed. The interventions used in this study had no drawbacks to the participants.

Outcome Measures

Numeric Pain Rating Scale (NPRS) was used to score the pain intensity of patient. The patient had to mark his/her pain levels from 0 to 10 with zero being no pain while ten being the severe pain. Its reliability ranges from 0.96 to 0.98 which is considered as high [10].

Ethical Approval

Ethical approval letter was sought from The University of Faisalabad. The Institutional Review Board approval number given by Ethics Committee of The University of Faisalabad was Tuf/IRB/346/24 dated 15th July 2024. This trial is registered in Iranian Registry of Clinical Trials with id IRCT20221006056105N2.

RESULTS

Assumption for the normality of data was tested by Shapiro-Wilk test as the sample size was less than 50. After applying test of normality, it was depicted NPRS followed non normal distribution. Non-parametric tests were used to analyze the variable of pain. Mann Whitney U test was utilized for between-group comparison for the NPRS whose data had a non-normal distribution. P values of less than 0.05 were regarded as significant, and the findings were interpreted in that light.

The gender distribution of participants of group A showed that out of 13 participants, 7 were females which were 53.9% while 6 were males which were 46.1%. The gender distribution of participants of group B showed that out of total 13 participants, 7 were females while 6 were males. In terms of percentage, 53.8% were females while 46.2% were males.

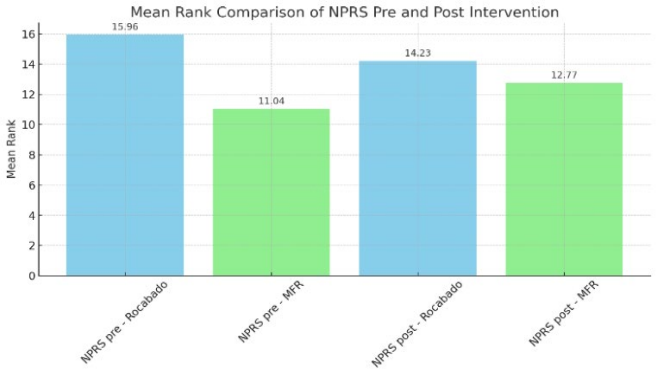
Table 1

Mann Whitney U Test for NPRS, JFLS and Mouth Opening ROM between Group A and B

Variables	Group	N	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)
NPRS pre	Rocabado	13	15.96	207.50	.080
	MFR	13	11.04	143.50	
	Total	26			
NPRS post	Rocabado	13	14.23	185.00	.604
	MFR	13	12.77	166.00	
	Total	26			

Table 1 shows the Mann Whitney U test for comparison between group A and group B for NPRS. There was reduction in mean rank value of Group A which was 15.96 at baseline and 14.23 after treatment while there was slight increase in mean rank value of group B which was 11.04 at baseline and 12.77 after treatment.

Figure 1



The pretreatment value of two tailed significance was .080 which was greater than .05 showing that both groups were comparable, the p value after treatment was .604 which showed that there was no statistically significant difference in terms of improving pain in both techniques of intervention.

DISCUSSION

The present study entitled "Rocabado Exercises vs Myofascial Release: Comparative effects in patients with Temporomandibular Joint Dysfunction" was carried out in the physiotherapy OPD of Allied Hospital and Madinah Teaching Hospital Faisalabad.

The findings of this study depicted that both of these techniques either active exercises (Rocabado) or passive soft tissue release (MFR) help in limiting pain, improving functional status and promoting normal mouth opening range of motion in patients with TMJ dysfunction. These results are consistent with a study conducted in 2023 by Magdalena et al. that assessed the effectiveness of manual soft tissue treatments and therapy activities in individuals experiencing temporomandibular joint pain and reduced mobility [11].

The present study findings reported that Rocabado exercises were quite effective in terms of reducing pain, enhancing functional status of temporomandibular joint and improving the range of mouth opening which are at odds with the outcomes of a study by Pundkar et al. that assessed how well the Rocabado technique and traditional physiotherapy worked for individuals with TMJ dysfunction in terms of pain, range of motion, and quality of life which concluded on a fact that there was still a room to do further researches to see the effects of Rocabado approach on TMJ dysfunction [12].

The end result of current study also showed a slight increase in pain levels after treatment which opposes the outcome of a research conducted by Braun et. al concluding that Myofascial release is effective in reducing pain levels while joint mobilization is more effective in improving range of motion [13]. The current study used myofascial release technique as one treatment approach and the effects of which are in line with a study concluding on the fact that myofascial release technique along with non-steroidal anti-inflammatory drugs is effective in improving mobility and functional status in

patients with TMJ dysfunction associated with neck pain [14].

CONCLUSION

The conclusion of current study was that there was no statistically notable differentiation between the effects of Myofascial release technique and Rocabado exercise on pain and jaw mobility in individuals with temporomandibular joint dysfunction.

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