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Orthopaedic manual therapy in patients with myofascial pain in temporomandibular dysfunction

Terapia manual ortopédica em pacientes com dor miofascial na disfunção temporomandibular

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ABSTRACT

Background: Temporomandibular dysfunctions are disorders that encompass a set of signs and symptoms such as myofascial pain, decreased mouth opening, cervicalgia, dizziness, tinnitus, muscle fatigue, among others. Manual therapy as a conservative treatment of physiotherapy focuses on pain relief and improvement of its functionality, showing its effectiveness. **Objective:** To identify whether orthopedic manual therapy improves myofascial pain in patients with temporomandibular dysfunctions. **Methods:** A quantitative longitudinal methodology was used. The sample consisted of 15 adults aged 20-40 years diagnosed with disc-originated temporomandibular dysfunction disorders at the Type "B" Health Centre of the Government Patronage of Chimborazo Province (*Patronato del Gobierno Autónomo Descentralizado Provincial de Chimborazo*). The theoretical statistical method used was the T-test or Student's t-test, and the processing of the information to obtain the data was carried out with the SPSS computer system, version 29.0 for Windows in Spanish**. Results:** Concerning the intervention, the difference is statistically significant in the intensity of pain measured with the Analogue Pain Scale (EVA), the severity of temporomandibular dysfunction measured with the Helkimo index, as well as the people who present anteromedial displacement of the articular disc. The confidence level p=,000 was obtained. **Conclusions:** orthopedic manual therapy improves the myofascial pain presented by patients with temporomandibular dysfunctions. A significant statistic is evidenced.

Keywords: temporomandibular joint; temporomandibular joint dysfunction syndrome; temporomandibular joint disc; myofascial pain.

RESUMO

Introdução: As disfunções temporomandibulares são distúrbios que englobam um conjunto de sinais e sintomas como dor miofascial, diminuição da abertura bucal, cervicalgia, tontura, zumbido, fadiga muscular, entre outros. A terapia manual como tratamento conservador da fisioterapia tem como foco o alívio da dor e melhora de sua funcionalidade, mostrando sua eficácia. **Objetivo:** Identificar se a terapia manual ortopédica melhora a dor miofascial em pacientes com disfunções temporomandibulares. **Métodos:** Foi utilizada uma metodologia longitudinal quantitativa. A amostra consistiu em 15 adultos com idades entre 20 e 40 anos diagnosticados com disfunção temporomandibular de origem discal no Centro de Saúde Tipo "B" do Patrocínio do Governo da Província de Chimborazo (Patronato del Gobierno Autónomo Descentralizado Provincial de Chimborazo). O método estatístico teórico utilizado foi o teste T ou teste t de Student, e o processamento da informação para obtenção dos dados foi realizado com o sistema computacional SPSS, versão 29.0 para Windows em espanhol. **Resultados:** Em relação à intervenção, a diferença é estatisticamente significativa na intensidade da dor medida pela Escala Analógica de Dor (EVA), na gravidade da disfunção temporomandibular medida pelo índice de Helkimo, bem como nas pessoas que apresentam deslocamento anteromedial do disco articular. O nível de confiança p=.000 foi obtido. **Conclusões:** a terapia manual ortopédica melhora a dor miofascial apresentada por pacientes com disfunções temporomandibulares. Uma estatística significativa é evidenciada.

Palavras-chave: articulação temporomandibular; síndrome da disfunção da articulação temporomandibular; disco da articulação temporomandibular; dor miofascial.

INTRODUCTION

The temporomandibular joint (TMJ) is a synovial type joint. It is found bilaterally and it is capable of rotation and translation movements (Kusch & Gaspar, 2020). It is formed by 3 elements: mandibular condyle, mandibular fossa of the temporal bone and by a biconcave fibrous disc. For this joint to function correctly, it is necessary to synchronize the movements of the disc, the condyle and the masticatory muscles (García-Mateosa M,M, et al., 2020).

The movement of the articular disc depends on those of the mouth (Fernando, 2021). The position change of the articular disc generates temporomandibular dysfunction (TMD), as there is a lack of coordination in the movement be-tween the disc and the condyle (Ortiz-Barcia & Barona-Terán, 2021).

Temporomandibular dysfunction is a problem that can affect unilaterally or bilaterally and is characterized mainly by myofascial pain and headaches. Among the most frequently signs that can occur are joint noise, muscle hypertrophy, midline deviation and limitation of mandibular movements (Martín et al., 2021). In temporomandibular dysfunction, the following oral behaviors can be evidenced: pressing the jaw in 59.3%, chewing food on one side in 46.3%, pressing, touching or keeping the teeth together when not eating in 33.3%; and eating between meals in 33.3% (Xu, et al., 2021).

The causes are of muscular origin in 30%, 23% by disc displacement, 1.9% by osteoarthritis and 4.8% for osteo-arthrosis. Myofascial pain due to DTM constitutes 60% of cases (Real, 2018) It is believed that at some point in our life, we will experience this pain. This condition causes a deterioration in the quality of life of people who suffer from it, involving an inefficiency in all the activities they perform (Iturriaga, et al., 2014).

In the normal position of the articular disc, the posterior band is located at 12 o'clock and the intermediate zone at 10 o'clock (Zotti, et al., 2014). Displacement of the disc can occur in any direction being the most common the anterior displacement and infrequently the posterior displacement (Aguilar, Germán et al., 2021) Displacement with reduction is one of the intra-articular disorders that occurs more frequently (Poluha, R et al., 2019). The main symptoms of articular disc displacement are pain, clicking or crackling when opening or closing the mouth (Castillo & Picco, 2011).

Temporomandibular disorders have a worldwide frequency of 70 to 90%. 5 to 13% of people have severe symptomatology. It is a disease of modern society and stress exacerbates symptomatology (Gomez, 2018). In the research of Urbani, et al., (2019) it was established that 1 in 4 people present symptomatology at the temporomandibular joint level. (Matos-Frómeta et al., 2021) In Ecuador, in Cuenca city, the prevalence of patients presenting temporomandibular dysfunction is 75.6% in female sex and an age range from 20 to 40 years. The study also determined that the factor associated with the presence of temporomandibular dysfunction is stress in 65.8% of cases (Vásconez et al., 2017). In the province of Chimborazo in Ecuador, a study was conducted in 2013. It evaluated temporomandibular dysfunction in an educational institution. The result was that 50% of the population studied presented temporomandibular dysfunction, 87% of male sex, of which 53% presented moderate dysfunction. On the other hand, the entire female study population presented mild dysfunction (Velastegui, 2013).

Orthopedic manual therapy is characterized by mechanical action on soft and articular tissues (Spinola, et al., 2022). When this therapy is applied to the temporomandibular joint as a treatment for its dysfunctions, it shows great effectiveness in mitigating myofascial and articular pain, as well as in improving joint mobility (Vieira, et al., 2023).

In the research of Yulán-Ceavichay & Cañarte-Luna, (2022), abnormal position of the articular disc and bone morphological changes established that 53% are female. The age with the highest prevalence ranges from 27 to 59 years of age, 65% presented normal disc position, 22% slight disc displacement, 5% moderate disc displacement, 2% complete disc displacement and 2% complete disc displacement with severe loss of morphology. In the present study it was possible to identify that disc displacement is not one of the main causes of bone morphological changes, since only 2% of people presented this condition.

The study by Asquini G et al., (2019) entitled "Predictors of pain reduction following manual therapy in patients with temporomandibular disorders: a protocol for a prospective observational study", applied a treatment consisting of 4 sessions of 20 to 30 minutes each and for 4 weeks of intervention. It administered manual therapy exercises applied to the craniomandibular segment. The intervened muscles are temporalis muscles, masseter muscles, medial and lateral pterygoid muscles and suprahyoid muscles. The researchers concluded that manual therapy is a good method for instantaneous pain relief. This study was able to identify ≥30% pain reduction, but with little effectiveness for a long-term outcome.

Calixtre L et al., (2015) in their study, "Manual therapy for the management of pain and limited range of motion in subjects with signs and symptoms of temporomandibular disorder", they mention that manual therapy in the temporo-mandibular joint is effective. It was proven with another intervention and without any intervention or placebo. The results were that orthopedic manual therapy has moderate to high evidence for pain relief. It improves mouth opening and pain

threshold to pressure.

For these reasons, the objective of the research is to identify whether orthopedic manual therapy improves myo-fascial pain in patients with temporomandibular dysfunctions.

METHODOLOGY

The present study has a quantitative, cross-sectional methodology with a census population. It had the participation of 15 adults who use myorelaxant plate at night, from an age range of 20 to 40 years, diagnosed with temporomandibular dysfunction disorders of disc origin. They were referred from the Dental Department of the Type "B" Health Center of the Patronato Provincial de Chimborazo-Ecuador. There was an average of 700 patients per month.

The inclusion criteria were 15 people of both sexes who participated in the research freely and voluntarily. They were referred by the dentistry area with a diagnosis of temporomandibular disorder with displacement of the disc with reduction, who presented myofascial pain of disc origin.

People presenting temporomandibular dysfunction of painful joint origin such as arthralgia, arthritis, degenerative, congenital or developmental processes, fractures, trauma to the temporomandibular joint were excluded.

The instruments used for the evaluation were the Visual Analog Scale (VAS), Helkimo index (used to identify the severity of the dysfunction presented by the participants), the "Pain Map" test of Dr. Mariano Rocabado, a test to identify which structures of the temporomandibular joint are affected. The Visual Analog Scale (VAS), which evaluates the intensity of pain, consists of a horizontal line of 10 centimeters. Its left end shows us absence of pain, whereas the right end shows the highest intensity. The patient marked the pain intensity. The interpretation of the pain intensity will be mild from 1 to 4 cm, moderate from 5 to 7cm and severe higher than 7cm. (Vicente-Herrero et al., 2018).

The Helkimo index classifies temporomandibular dysfunctions according to their severity. It evaluated the follow-ing parameters: limitation in the mandibular range of motion, alterations in joint function, pain on movement, muscle pain, and pain in the temporomandibular joint. The determination of the dysfunction each patient has is done according to the index score. The dysfunction is classified as no TMD (0 points), mild (1-4 points), moderate (5-9 points), severe grade I (10-14 points), severe grade II (15-19 points) and severe grade III (20-25 points). It showed a sensitivity of 78.6% and a specificity of 50% (Gomez, 2020).

The Rocabado pain map is a palpatory mapping of 8 points: 1. Antero-inferior synovial, 2. Antero-superior synovial, 3. lateral collateral ligament, 4. temporomandibular ligament, 5. inferior post synovial, 6. superior post synovial, 7. posterior ligament, and 8. retrodict. The physiotherapist stresses each zone and it will be positive if the patient presents pain. Zone 1 positive: articular hypermobility (hyperlaxity), zone 2 positive: Squeezing or 1 osteophyte that produces compression, zone 3 positive: Anteromedial displacement of the disc, zone 4 positive: Hyperlaxity of the ligament or capsular retraction, zone 5 positive: Compression of the posterior zone (synovial) class 2 with fulcrum of the same side and produces displacement of the disc condyle, zone 6 positive: Loss of the D. V edentulous, posterior - severe brachy, occlusal disharmonies, and clenchers, zone 7 positive: Squeezing, class II, 2nd Division, and zone 8 positive: Increased intraarticular pressure - clencher (bruxer) (Hidalgo, et al., 2021).

The intervention lasted 16 weeks with the application of Orthopedic Manual Therapy techniques, and there were 2 sessions per week. The first two weeks were dedicated to evaluation through the use of the aforementioned tests. The informed consent had to be signed. The creation of clinical histories was endorsed by the Ministry of Public Health of Ecuador. The following 12 weeks, orthopedic manual therapy techniques were used. They were validated by a committee of experts made up of 1 medical specialist in rehabilitation and 2 physiotherapists with a university master's degree in physiotherapy of the musculoskeletal system, specialized in orthopedic manual physiotherapy. The study had 3 stages, each stage lasted 4 weeks, the last 2 weeks were used for a post evaluation.

Stage I consisted of 1 extraoral exercise and 2 intraoral exercises, a single series of each: Anteroposterior extra oral mobilizations. The patient is in supine decubitus and the physiotherapist will have his caudal hand at the level of the mandible by the external part, on lower molars and lower jaw. A distraction is performed for 30 seconds towards anterior and towards posterior for 4 repetitions. Post extraoral mobilization is performed. The patient is in lateral decubitus with the side to be treated in supra lateral position, and the physiotherapist places his thumbs at the posterior level of the TMJ. Traction towards anterior is performed, for 30 seconds with a rest of 10 seconds for 4 repetitions. Traction in caudal direction is carried out with the patient in supine position. The physiotherapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the external border of the patient's mandible. The caudal hand will perform the movement towards the mandibular fossa of the temporal bone. Stage II con-sists of 3 intraoral exercises. Traction in caudal direction is

performed with a patient in supine position and the physio-therapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the external border of the patient's mandible. The caudal hand will perform the movement towards the mandibular fossa of the temporal bone for 2 series. Traction in longitudinal direction: the patient is in supine position, and the physiotherapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the outer edge of the patient's man-jaw. The caudal hand performs the longitudinal movement to the joint. Traction was applied towards caudal for 30 seconds, with 10 seconds rest, for 4 repetitions, and 2 series. Ventral glide: the patient is in supine position, and the physiotherapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the external border of the patient's mandible. The caudal hand will perform the movement towards ventral parallel to the concave fossa of the temporal bone. The traction towards ventral will last for 30 seconds, with a rest of 10 seconds, for 4 repetitions, and 1 series. Stage III consists of 3 exercises. Ventral sliding: the patient is in supine position, and the physio-therapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the external border of the patient's mandible, the caudal hand will perform the movement towards ventral parallel to the concave fossa of the temporal bone. Traction towards ventral lasts 30 seconds, with a rest of 10 seconds, for 4 repetitions, and 2 series. Articular decoaptation technique: the patient is in supine position, and the physiotherapist will have his caudal hand at the level of the mandible, thumb on lower molars and other fingers on the external border of the patient's mandible. The caudal hand will perform the traction towards caudal posterior and a movement of anteroposterior and lateral translation is done. We perform 6 series of 6 repetitions with rest between series of 10 seconds. Extraoral-transverse mobilization: the patient is in lateral decubitus position with the side to be treated in supra lateral position, and the physiotherapist places his thumbs at the level of the TMJ and performs a pressure towards caudal. Repetitions of 6 by 6 series are carried out (Pérez-Fernández & Parra-González, 2019).

Statistical analysis

The information was processed using differential statistics, the T-test or Student's t-test program was used for the analysis of the initial and final evaluation. Statistical significance was considered when p<.000. To analyze the results obtained, the SPSS computer system, version 29.0 for Windows in Spanish, was used. The tables were expressed in frequency, percentage and standard deviation.

Bioethics considerations.

The present study was approved by the Human Research Ethics Committee of the Faculty of Health Sciences of the Technical University of Ambato, Ecuador, through the resolution COD 032-CEISH-UTA-2023. It expresses compliance with all the ethical, methodological and legal requirements established by the regulations. Informed consent was applied to each of the patients who are intervened in this study.

RESULTS AND DISCUSSION

The sample of patients in the present study consisted of 15 adults between 20 and 40 years of age diagnosed with temporomandibular dysfunction disorders of disc origin. They were referred from the Dental Area of the Type "B" Health Center of the Patronato Provincial de Chimborazo. The intervention had a duration of 16 weeks with the application of Orthopedic Manual Therapy techniques, with a frequency of 2 sessions per week.

STATISTICAL DATA OF GENDER CLASSIFICATION

Table 1 Gender descriptive statistics, 2023

	Gender	Frequency	Percentage	Percentage Valid
Válido	MALE	4	26,7	26,7
	FEMALE	11	73,3	73,3
	Total	15	100,0	100,0

The predominant sex in this study that has temporomandibular dysfunction of disc origin are female patients with a valid percentage of 73.3%. The male sex represents 26.7%.

ASSESSMENT USING THE EVA ANALOG SCALE

Table 2. Assessment of pain intensity in adults with temporomandibular dysfunction of disc origin.

Intensity of pain	Initial evaluation		Final evaluation	
	Frequency	Percentage (%)	Frequency	Percentage (%)
MILD	-	-	14	93,3
MODERATE	7	46,7	1	6,7
SEVERE	8	53,3	-	-
Total	15	100,0	15	100,0

Using the Visual Analog Scale, which measures pain intensity, the initial evaluation showed that 46.7% of the patients presented moderate pain and 53.3% severe pain, the latter being the predominant pain in the patients. The final evaluation shows that the mild score predominates with 93.3% and moderate with 6.7%. Then we found that the patients before starting the intervention presented severe pain with a score higher than 7, pain caused by temporomandibular dysfunction. And the final evaluation showed that the intensity of pain presented by the patients decreased from severe to mild in a range of 0 to 4 in comparison to the initial evaluation.

ASSESSMENT USING THE HELKIMO INDEX

Table 3. Assessment of temporomandibular dysfunction severity

Severity of DTM	Initial evaluation		Final evaluation	
	Frequency	Percentage (%)	Frequency	Percentage(%)
MILD	-	-	3	20,0
MODERATE	8	53,3	10	66,7
SEVERE GRADE I	4	26,7	2	13,3
SEVERE GRADE II	2	13,3	-	-
SEVERE GRADE III	1	6,7	-	-
Total	15	100,0	15	100,0

TMD - Temporomandibular Dysfunction

The Helkimo Index in the initial evaluation shows a moderate value of 5 to 9 points as the temporomandibular dysfunction severity that predominates in the study population with 53.3%, followed by severe grade I 10 to 14 points with 26.7%, serious grade II 15 to 19 points with 13.3% and grade III severity 20 to 25 points with 6. 7%. The result of the final evaluation reflects the severity of temporomandibular dysfunction after the application of manual therapy. 66.7% of patients present moderate severity with a score of 5 to 9 points, mild with a score of 1 to 4 points (20%) and severe grade I ranging from 10 to 14 points (13.3%).

EVALUATION USING THE ROCABADO PAIN MAP

Table 4 Rocabado pain mapping assessment

Mapping of pain	Initial evaluation		Final evaluation	
	Frequency	Percentage%	Frecuency	Porcentage%
Negative	-	-	12	80,0
Positive in pain: zone 3 with anteromedial displacement of the disc.	15	100,0	3	20,0
Total	15	100,0	15	100,0

All the patients in the initial evaluation presented a positive sign when stressing the lateral collateral ligament in zone 3. Thus, it is determined that all the population studied presents a temporomandibular dysfunction due to anteromedial displacement of the disc. The final evaluation of the Rocabado pain mapping shows that 80% of patients do not present symptomatology at the evaluation of the temporomandibular joint after the application of the manual therapy techniques. 20% present positive sign at the stressing of zone 3 of the lateral collateral ligament, positive to anteromedial displacement of the disc. That is to say that the result obtained after the application of the mentioned technique is the recapturing of the articular disc.

HYPOTHESIS TESTING

Hypothesis statement

H0 Articular disc recapture does NOT help to improve myofascial pain of temporomandibular dysfunctions

H1 Articular disc recapture helps to improve myofascial pain of temporomandibular dysfunctions.

Decision criteria

Where p is the confidence level

If $p>0.05$, we accept H0 and reject H1.

If $p<0.05$, we reject H0 and accept H1.

The hypothesis of the present study has been tested with the help of Student's t probability distribution.

PAIRED STATISTICS OF INITIAL AND FINAL EVALUATION OF THE VISUAL ANALOG SCALE

Table 5. Paired sample statistics: pain intensity by VAS assessment

Evaluation	Mean	N	Standard deviation	Mean standard error
Initial	7,80	15	,941	,243
Final	1,73	15	1,751	,452

Table 6 Sample t-test relating initial and final assessment of pain intensity using VAS evaluation

	Paired differences					T	Gl	Sig. (bilateral)
	Mean	Standard deviation	Mean standard error	95% confidence interval of the difference				
				lower	higher			
Initial - Final Evaluation	6,067	1,387	,358	5,299	6,835	16,940	14	,000

INTERPRETATION

As p=0, the same as <0.05, H0 was rejected and we accepted H1. In the VAS, the mean of the initial evaluation is 7.80 and in the final evaluation is 1.73. This difference is statistically significant, and it was obtained by applying the Student's t-test T(14)=16,94; p<0,05.

PAIRED STATISTICS OF INITIAL AND FINAL HELKIMO INDEX EVALUATION

Table 7. Paired sample statistics: temporomandibular dysfunction severity

Assessment	Mean	N	Standard deviation	Mean standard error
Initial	11,13	15	4,749	1,226
Final	2,33	15	2,350	,607

Table 8 Paired samples test severity of temporomandibular dysfunction

	Paired differences					t	Gl	Sig. (bilateral)
	Mean	Standard deviation	Mean standard error	95% confidence interval of the difference				
				Lower	Higher			
Initial - Final Evaluation	8,800	3,448	,890	6,891	10,709	9,886	14	,000

INTERPRETATION

As p=0, the same as <0.05, H0 was rejected and we accepted H1. In the evaluation of the Helkimo Index, the mean of the initial evaluation is 11.13 and post test is 2.33. This difference is statistically significant, and it was obtained through the application of the Student's t-test. T (14)=9.886; p< 0.05.

PAIRED STATISTICS OF INITIAL AND FINAL EVALUATION OF THE ROCABADO PAIN MAP.

Table 9. Paired sample statistics of structures affected by temporomandibular dysfunction.

Evaluation	Half	N	Standard deviation	Mean standard error
Initial	3,00	15	,000	,000
Final	,60	15	1,242	,321

Table 10 Paired samples test of structures affected by temporomandibular dysfunction.

	Paired differences					t	Gl	Sig. (bilateral)
	Mean	Standard deviation	Mean standard error	95% confidence interval of the difference				
				Lower	Higher			
Evaluation Initial - Final	2,400	1,242	,321	1,712	3,088	7,483	14	,000

INTERPRETATION

As p=0, the same as <0.05, H0 was rejected and H1 was accepted. In the evaluation of the Rocabado Pain Map, the mean of the pre-test is 3.00 and post-test is 0.60. This difference is statistically significant, and it obtained through the application of the Student's t-test. T (14)=7,483; p< 0,05.

The results report significant changes in myofascial pain through the use of orthopedic manual therapy exercises to recapture the articular disc.

In the present study the female sex predominated with 73.3% indicating that the prevalence of presenting temporomandibular dysfunction is higher. The result obtained is similar to Matos et al. (2021) who stated that the predominance of the female sex in suffering TMD is due to multiple causes such as psychic disturbances, nervous tension, uneasiness and anguish.

For the assessment of myofascial pain, the VAS of pain was used. 53.3% showed severe pain, as the intensity of pain that the patients initially presented. After the application of orthopedic manual therapy techniques as a treatment to improve myofascial pain, there was evidence of a decrease in the intensity of pain in the patients. 93.33% reduced the intensity of pain from severe to mild. There was a significant result in the improvement of myofascial pain in temporo-mandibular dysfunctions through the application of manual therapy. This result can be affirmed with the study of Borja & Abril (2022) in which it is evident that patients at the beginning of the intervention presented moderate pain and after the application of manual therapy the pain decreased to mild.

The Helkimo index shows the severity of temporomandibular dysfunction. The result of the initial evaluation stat-ed that the patients were in a category of moderate, severe grade I, severe grade II and severe grade III. After the treatment intervention, the severity of dysfunction was framed in the mild, moderate and severe grade I category. It is evident that orthopedic manual therapy is effective in improving the severity of temporomandibular dysfunctions and with it, the reduction of myofascial pain.

One of the evaluation instruments used in the present study was the Rocabado Pain Map which allowed us to identify the location of the zones that present problems causing temporomandibular disorders. Our population in the initial stage showed 100% pain in zone 3, which is equivalent to an anteromedial displacement of the disc. At the end of the intervention it was demonstrated that the manual therapy techniques corrected the dysfunction in 80% of the patients and that only 20% of the patients kept the pain in zone 3. The results obtained correlate with other studies.

As a result of this study, the effectiveness of orthopedic manual therapy is identified at the time of decreasing the symptomatology of patients who present this dysfunction, as is the case of myofascial pain. It correlates certain studies that demonstrate the effectiveness of orthopedic manual therapy as Santos P et al., (2017) that show the effectiveness of orthopedic manual therapy included in a conventional program. It improves mandibular opening. 9 of 10 patients achieve an opening greater than or equal to 40mm. Concerning pain relief on palpation of the mandibular condyle, a relevant effect is established in the pain of the lateral pole and around, decreasing 3 or more points in initial VAS scale. Another study that reaffirms the results obtained in our research is the one carried out by Ortiz & Quito (2022) which states that a decrease of 30% of pain according to the EVA scale is equivalent to good results. It is concluded that manual therapy in the short term shows an effectiveness in reducing symptoms, especially pain, improves mobility and mouth opening. Likewise, Nunes et al. (2020) in their study shows the effectiveness of the application of orthopedic manual therapy, with a statistical significance (p<0.05) in the level of pain, symptomatology, degree of dysfunction and increase of mandibular mobility.

CONCLUSION

As for the initial clinical presentation of the population studied with temporomandibular dysfunction, it is concluded that in the VAS evaluation, severe pain intensity is present in 53.3% of them. The Helkimo index shows a severe degree of dysfunction and the Rocabado pain map shows an anteromedial displacement of the articular disc in 100% of the patients.

The orthopedic manual therapy techniques to improve myofascial pain in temporomandibular dysfunction were applied in 12 weeks, distributed in 3 stages, each stage lasting 4 weeks. Stage I consisted of anteroposterior extraoral mobilizations, posteroanterior extraoral mobilizations, and tractions in caudal direction. Stage II consisted of tractions in caudal direction, tractions in longitudinal direction, and ventral glides. Stage III consisted of ventral glides, joint decoaptation techniques, and extra oral-transverse mobilizations.

The final evaluation of patients with myofascial pain in temporomandibular dysfunction was determined by means of the VAS evaluation with 93.3% of mild intensity. The Helkimo index shows a moderate degree of dysfunction in 66.7% and according to the Rocabado pain map 80% of the patients managed to obtain a recapture of the articular disc.

The orthopedic manual therapy techniques to improve myofascial pain are effective, since a statistically significant difference is evidenced when performing the paired sample statistics. They achieve an improvement in the patients' lifestyle through pain relief and joint disc recapture.

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