Assessment of the effects of physiotherapy in patients with bruxism with the use of splint therapy – preliminary study

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Abstract

Background: Bruxism is an increasingly prevalent phenomenon that adversely impacts the masticatory system, often being associated with temporomandibular joint disorders. Dental physiotherapy primarily addresses dysfunctions within the temporomandibular joint, as well as pathology within the cervical section and muscles in the craniofacial region, including the supra and infrahyoid muscles.

Aims: This study aimed to compare the effects of dental physiotherapy between two groups of patients with bruxism, with one group receiving additional treatment using a Michigan relaxation splint.

Material and methods: The study included twenty participants, with one group (n=10) undergoing dental physiotherapy alone (G1), and the second group (n=10) receiving dental physiotherapy along with Michigan relaxation splints (G2). The therapy cycle comprised a total of six visits, occurring twice a week. Therapeutic interventions encompassed fascial work on the face, cervical, sternum, and thorax; deep tissue massage; trigger point development; and post-isometric muscle relaxation. Additionally, patients engaged in the Rocabado exercise program at home.

Results: Therapy resulted in significant improvements in active cervical mobility for both groups across various movements ($p<0.05$), with no statistically significant differences observed between the two groups after therapy ($p>0.05$). Also, therapy led to significant improvements in mandibular movements for both

Key words

bruxism, soft tissue therapy, dental physiotherapy, relaxation splint.

groups across various dimensions ($p<0.05$). There were no statistically significant differences between the two groups after therapy in terms of mandibular abduction, protrusion, and lateral movements ($p>0.05$). In both groups, a significant reduction in pain was achieved after the therapy (G1 $p=0.0051$; G2 $p=0.0051$). In both groups, the number of trigger points and associated pain was significantly reduced after the therapy ($p<0.05$).

Conclusions: Physiotherapeutic procedures, involving soft tissue work and the incorporation of Rocabado exercises, demonstrated a substantial capacity to enhance the active range of motion (ROM) of the cervical and mandibular regions. Furthermore, these interventions contributed to pain reduction and a decrease in the number of trigger points in patients with bruxism.

Introduction

Currently, bruxism is an increasingly prevalent phenomenon with adverse effects on the masticatory system. The roots of this issue can be traced back to biblical references, where it was labeled as "the first punishment from God." The term "bruxism" itself originates from the Greek word "brugmos," meaning "teeth crushing" [1]. In 2013, bruxism was formally defined as the repetitive activity of masticatory muscles involving grinding and/or clenching, often accompanied by jaw stiffness. Literature further categorizes bruxism into awake bruxism and sleep bruxism, depending on the predominant time of day for these occurrences [2].

It is estimated that bruxism may affect a considerable percentage of the adult population, ranging from 5.9% to 49% [3]. Pathologically worn teeth, dental structure damage, fractures, and prosthetic restoration issues are hallmark signs of bruxism. Additionally, individuals with bruxism may experience orofacial pain, tension headaches, and tinnitus. Bruxism is also linked to temporomandibular joint (TMJ) disorders, further impacting the quality of life for affected individuals. Nighttime awakenings contribute to distraction and excessive daytime sleepiness [4, 5].

The treatment of bruxism is both symptomatic and comprehensive, underscoring the crucial role of an interdisciplinary team in mitigating the symptoms associated with teeth grinding. While a dentist plays a central role, collaboration with other specialists, including psychotherapists or psychiatrists, physiotherapists, and speech therapists, is emphasized. Treatment options encompass cognitive-behavioral therapy, biofeedback therapy, and pharmacological approaches such as botulinum toxin type A. Recognizing the significance of stress and psychological factors as potential contributors to the disorder, patients are often recommended for counseling in this domain. Accurate patient diagnosis and psychological intervention thus target the root cause of bruxism. However, the focus of treatment often extends to pain reduction and the preservation of teeth from further pathological wear [6-9].

One proposed solution for individuals with bruxism involves the use of stabilization splints. Among these, the Michigan splint, considered a type of relaxation splint, is particularly popular. This appliance is positioned on the upper dental arch and is custom-selected to match the individual's resting gap width in the central relation. Stabilization splints can be utilized for up to 24 months, with a recommendation for nocturnal use and during the day in stressful situations [10,11].

Dental physiotherapy is closely linked to TMJ dysfunctions and pathologies within the cervical section and muscles of the craniofacial, suprahyoid, and infrahyoid regions. Embracing the

concept of the human body as an interconnected whole, a comprehensive examination includes a visual assessment of the patient's body posture due to myofascial connections. This approach allows for distinguishing between ascending and descending dysfunctions based on whether the TMJ disorder is the cause or result of abnormalities in the patient's posture.

During the medical history inquiry, patients commonly report symptoms such as TMJ and occipital pain, cervical discomfort, shoulder joint pain, tinnitus, and a sensation of a blocked ear [12, 13]. In addressing muscle and fascial structural disorders, manual therapy techniques on soft tissues play a crucial role. These may include deep tissue massage, myofascial release, active relaxation techniques, post-isometric muscle relaxation, and trigger point therapy [14-18].

In the context of treating bruxism patients, various physiotherapeutic elements, including electrotherapy, postural re-education, muscle relaxation, exercises, massage, and acupuncture, are distinguished. These interventions primarily aim to alleviate pain and enhance the range of motion (ROM) of the TMJ [19].

Aims

This study aimed to assess and compare the effects of dental physiotherapy in two distinct groups of patients with bruxism. One of these groups received supplementary treatment through the application of a Michigan relaxation splint.

Material and methods

Study group

A total of 20 individuals aged 27 to 53, diagnosed with bruxism by a dentist, were selected for participation in the study. These participants were randomly assigned to two groups. Group G1 (Women: n=5, Mean age=36.00 ±6.28; Men: n=5, Mean age=43.40 ±7.13) comprised patients who exclusively underwent elements of dental physiotherapy and did not receive a relaxation splint from the attending physician. Group G2 (Women: n=5, Mean age=35.20 ±5.26; Men: n=5, Mean age=38.60 ±11.37) included patients who were provided with a relaxation splint by the attending physician and concurrently underwent physiotherapy.

Intervention

Patient therapy was conducted by a physiotherapist with 15 years of experience, who underwent additional training in dental physiotherapy from May to October 2020. Inclusion in the study required participants to attend all scheduled visits with the physiotherapist and adhere to prescribed exercises at home. Before commencing the research, participants were briefed on the research's purpose, the option to withdraw at any point, and the confidentiality of personal data, in accordance with the Declaration of Helsinki. Participation in the project was entirely voluntary and cost-free.

Measurements

The participants engaged in a total of six sessions with a physiotherapist, with therapy sessions occurring twice a week on Mondays and Thursdays. On both the first and last visit, a physiotherapeutic examination was conducted based on a customized questionnaire:

- Measurement of the active ROM of the cervical section. The test was performed using Baseline anthropometric tape. The tool meets the MDD93/42EEC directives in the field of medical devices. The unit of measurement was centimeters. Active mobility was measured, respectively, for flexion, extension, lateral bending to the right/left, and rotation to the right/left side, according to the methodology of the examination for the needs of physiotherapy [20].
- Measurement of active mobility for TMJs:

  A. Abduction of the mandible: the examiner measures between the edges of the upper and lower incisors during maximum mandibular abduction, with the normal range being 44-54mm.

B. Lateral movement of the mandible: measurement between the maxillary midline and the center of the mandible in maximum lateral position (lateral displacement); measurements were taken for both left and right sides. The standard measurement is 10mm, with an allowed difference between left and right movements of 2mm.

C. Mandibular protrusion: measurement between the labial surface of the upper incisors and the lingual part of the lower incisors with the mandible as far as possible. The normal range is 7–8mm [21].

- Determination of the average daily level of pain associated with bruxism using the Numerical Rating Scale (NRS) [22].
- Examination of trigger points within the head and neck of selected muscles:
  - temporal muscle
  - masseter muscle
  - lateral pterygoid muscle
  - posterior digastric muscle
  - suboccipital muscles
  - anterior and middle scalene muscles
  - descending trapezius muscle
  - sternocleidomastoid muscle.

The study focused on the muscles on both the left and right sides, excluding the suboccipital muscles, which were collectively examined. The diagnostic approach involved assessing the fibers by placing the fingertip flat, aiming to locate the trigger point (eliciting a pain reaction along with the characteristic radiation of pain for the specific muscle) [23]. Pain intensity was assessed by the patient on a scale ranging from 0 to 10.

Each physiotherapy session lasted 45 minutes and incorporated various techniques, including: work on the fascia of the face, cervical section, sternum and chest, deep tissue massage, trigger point development, post-isometric relaxation of the muscles in the neck and head area.

Furthermore, during the initial visit, patients were instructed on performing Rocabado exercises. The author devised a specialized exercise program (comprising 6 exercises, 6 repetitions, 6 times a day) aimed at alleviating pain, enhancing chewing function, and restoring the proper ROM within the TMJ and cervical segment. The exercise plan includes:

- *Resting position of the tongue.* Place the tongue on the palate (tongue upright). During this time, breathing with an accentuation of the abdominal (diaphragmatic) track is advisable. The patient performs "clucking" with the tongue.
- *Control of TMJ rotation.* Tongue touches palate. The patient places the index fingers in the TMJ area. The patient performs a mandibular abduction movement while keeping the tongue on the palate at all times.
- *Rhythmic stabilization of the mandible.* The index fingers are positioned on the chin, the thumbs below the jawbone to provide resistance. The patient performs the adduction, abduction and adduction movements sequentially. Tongue in resting position during exercise.
- *Distraction of the upper cervical spine.* Patient's hands placed together at C5-C7 for stabilization. Patient makes a slight flexion movement in the upper cervical region.
- *Cervical retraction.* The patient performs a nodding movement: bringing the chin close to the sternum and pointing the head backwards. There is a flexion movement in the upper neck and an extension movement in the lower neck.
- *Shoulder girdle retraction.* A posterior-medial movement of the scapulae towards the spine with their lowering [24].

Statistical analysis

The database was established in a Microsoft Excel spreadsheet. Calculations were conducted using TIBCO Statistica 13.3 (Palo Alto, United States). Statistical tools employed for data analysis included the arithmetic mean with standard deviation and minimum-maximum values, the

Wilcoxon paired order test, and the Mann-Whitney U test. The minimum level of significance was set at $p<0.05$.

Results

The active ROM of the cervical segment was measured in both groups at the initiation of therapy and upon completion of the therapeutic cycle. In both groups, statistically significant results were observed for all measurement components (**Table 1**). No significant difference between the groups was found ($p>0.05$).

Table 2 presents the results related to the active ROM of the mandible. The most substantial improvement was observed in mandibular abduction following the treatment cycle, with outcomes falling within the accepted standard for this measurement. In this instance, statistically significant results were also documented when comparing measurements before and after therapy for all study components. The Mann-Whitney U test revealed no significant intergroup differences ($p>0.05$).

Table 1. Active range of motion of the cervical section in the study groups.

aROM of the cervical section	Group	Before therapy			After therapy			p^1
		Mean [cm]	Min-Max	SD	Mean [cm]	Min-Max	SD	
Flexion	G1	2.35	1.50-3.00	0.47	2.70	2.50-3.00	0.26	**0.028**
	G2	2.30	1.50-3.00	0.48	2.55	2.00-3.00	0.37	**0.043**
	p^2	0.821			0.427			
Extension	G1	6.30	5.00-8.00	0.92	7.30	6.00-8.00	0.63	**0.008**
	G2	6.00	4.50-8.00	1.27	7.05	6.00-8.00	0.80	**0.008**
	p^2	0.473			0.496			
Side flexion right	G1	4.60	3.00-6.00	0.99	5.50	4.50-6.50	0.82	**0.005**
	G2	4.75	4.00-5.50	0.54	5.50	5.00-6.00	0.33	**0.008**
	p^2	0.705			0.850			
Side flexion left	G1	4.80	3.00-6.50	1.38	5.45	4.00-6.50	0.96	**0.018**
	G2	4.95	4.00-6.00	0.60	5.40	5.00-6.50	0.52	**0.028**
	p^2	0.850			1.000			
Rotation right	G1	6.75	6.00-8.50	0.82	7.35	6.50-8.50	0.63	**0.018**

Rotation right	G2	6.25	5.50-7.00	0.49	7.10	6.00-8.00	0.61	**0.005**
	p^2	0.186			0.496			
Rotation left	G1	6.60	6.00-8.00	1.10	7.30	6.00-8.50	0.71	**0.012**
	G2	6.50	5.00-8.00	1.08	7.00	5.50-8.00	0.85	**0.028**
	p^2	0.850			0.450			

Abbreviations: *G1– physiotherapy only, G2– physiotherapy + relaxation splint, aROM – active range of motion.*

Notes: *p^1 difference between the initial and final measurement (Wilcoxon pairwise order test) $p<0.05$; p^2 difference between groups (Mann-Whitney U test) $p<0.05$.*

Table 2. Active range of motion mandible in groups G1 and G2.

Mandibular movement	Group	Before therapy			After therapy			p^1
		Mean [cm]	Min-Max	SD	Mean [cm]	Min-Max	SD	
Mandibular abduction	G1	37.10	30.0-40.0	3.25	42.50	38.00-46.00	2.51	**0.007**
	G2	36.10	32.0-40.0	3.28	43.00	37.00-50.00	4.37	**0.005**
	p^2	0.406			1.000			
Mandibular protrusion	G1	6.60	4.0-8.0	1.26	7.70	7.00-9.00	0.67	**0.018**
	G2	6.70	4.0-8.0	1.25	7.60	6.00-8.00	0.70	**0.018**
	p^2	0.940			1.000			
Lateral movement right	G1	7.10	5.0-8.0	1.10	8.20	7.00-9.00	0.63	**0.012**
	G2	7.30	6.0-9.0	0.95	8.30	8.00-10.00	0.67	**0.012**
	p^2	0.880			1.000			
Lateral movement left	G1	6.90	5.0-9.0	1.37	8.10	7.00-10.00	0.99	**0.008**
	G2	7.90	6.0-10.00	1.10	8.80	8.00-10.00	0.92	**0.028**
	p^2	0.140			0.151			

Abbreviations: *G1– physiotherapy only, G2– physiotherapy + relaxation splint.*

Notes: *p^1 difference between the initial and final measurement (Wilcoxon pairwise order test) $p<0.05$; p^2 difference between groups (Mann-Whitney U test) $p<0.05$.*

he subjects were asked about the occurrence of pain during the day (**Fig. 1**). In both groups, a significant reduction in pain was achieved after the therapy (G1 p=0.0051; G2 p=0.0051).

Then, trigger points were diagnosed by palpating selected muscles and assessing pain during the examination (**Table 3**). Almost all subjects exhibited trigger points within the right (G1 n=9; G2 n=8) and left masseter muscle (G1 n=10; G2 n=9). The lowest occurrence of trigger points was noted when examining the lateral pterygoid muscle on both sides. In both groups, the number of trigger points and associated pain significantly decreased after therapy (**Table 4**). Prior to therapy, both groups exhibited significant differences in the occurrence of trigger points (p=0.013), with more trigger points noted in the group without a relaxation splint. However, there were no significant intergroup differences after therapy (p>0.05).

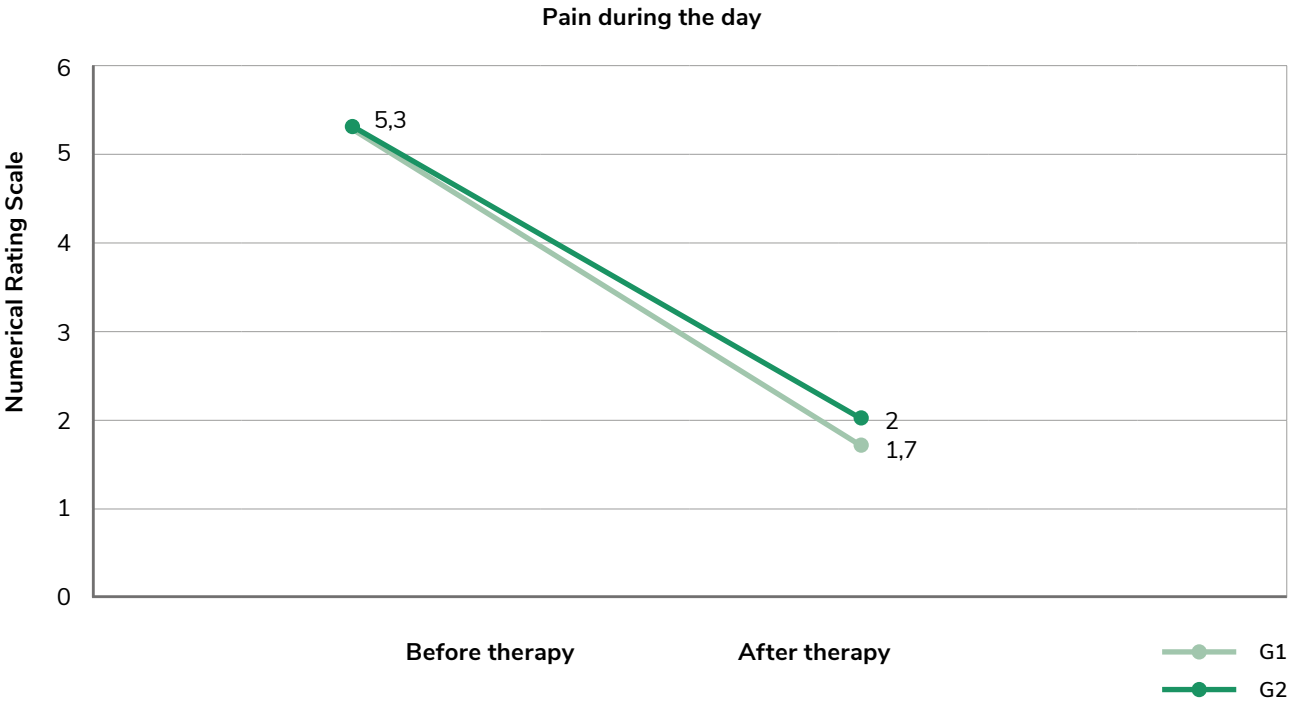

Figure 1. Pain ailments before and after the applied therapy.

Table 3. Presentation of trigger points in groups G1 and G2, taking into account individual muscles.

Muscle	Presence of trigger points	G1 Before therapy		G1 After therapy		G2 Before therapy		G2 After therapy	
		n	NRS	n	NRS	n	NRS	n	NRS
Right temporal	Yes	6	6.17±0.75	4	3.25±0.96	3	6.33±0.58	1	4.00
	No	4	0	6	0	7	0	9	0
Left temporal	Yes	7	5.86 ±0.69	4	3.50 ± 1.00	3	6.00±0	2	4.00±0
	No	3	0	6	0	7	0	8	0

Right masseter	Yes	9	7.22 ±0.97	8	3.38±1.06	8	7.00±0.93	8	3.75±1.49
	No	1	0	2	0	2	0	2	0
Left masseter	Yes	10	7.40±0.70	9	3.33±1.00	9	7.11±0.78	9	3.67±0.87
	No	0	0	1	0	1	0	1	0
Lateral pterygoid R	Yes	3	5.33±0.58	1	4.00	0	0	0	0
	No	7	0	9	0	10	0	10	0
Lateral pterygoid L	Yes	4	5.50±0.58	2	3.00±1.41	3	6.00±1.00	3	3.33±0.58
	No	6	0	8	0	7	0	7	0
Digastric R	Yes	4	5.25±0.50	2	2.00±0	2	6.00±0	2	3.00±0
	No	6	0	8	0	8	0	8	0
Digastric L	Yes	5	5.80±0.84	3	2.33±0.58	2	6.00±0	2	2.00±0
	No	5	0	7	0	8	0	8	0
Anterior scalene R	Yes	5	7.00±1.73	5	3.20±1.30	3	6.00±0	1	4.00
	No	5	0	5	0	7	0	9	0
Anterior scalene L	Yes	5	6.80±0.45	4	3.50±0.58	3	6.33±0.58	1	4.00
	No	5	0	6	0	7	0	9	0
Middle scalene R	Yes	5	5.80±0.84	2	3.00±1.41	1	6.00	1	4.00
	No	5	0	8	0	9	0	9	0
Middle scalene L	Yes	5	5.80±0.45	1	2.00	1	6.00	0	0
	No	5	0	9	0	9	0	10	0
Trapezius descending R	Yes	5	5.60±1.14	3	2.33±0.58	4	6.25±0.50	4	3.50±1.29
	No	5	0	7	0	6	0	6	0
Trapezius descending L	Yes	4	5.75±1.26	1	3.00	6	6.50±0.55	4	3.50±1.05
	No	6	0	9	0	4	0	6	0
SCM R	Yes	4	7.50±0.58	4	4.25±0.50	5	6.80±0.84	4	3.50±1.29
	No	6	0	6	0	5	0	6	0
SCM L	Yes	6	6.50±1.64	4	4.50±1.00	4	7.00±1.15	4	4.25±0.96
	No	4	0	6	0	6	0	6	0
Suboccipital	Yes	5	6.20±0.84	4	3.50±1.00	3	6.00±1.00	2	3.00±1.41
	No	5	0	6	0	7	0	8	0

Abbreviations: *G1 – physiotherapy only, G2 – physiotherapy + relaxation splint, NRS – Numerical Rating Scale, P – right side, L – left side, SCM – sternocleidomastoid muscle.*

Table 4. Sum of trigger points and pain associated with their occurrence in the study groups.

	Group	Before therapy			After therapy			p^1
		Mean	Min-Max	SD	Mean	Min-Max	SD	
Sum of trigger points	G1	9.20	5.00-14.00	2.74	6.10	3.00-10.00	1.79	**0.012**
	G2	6.00	2.00-9.00	2.05	5.00	2.00-8.00	1.89	**0.028**
	p^2	**0.013**			0.131			
NRS of trigger points	G1	6.38	6.07-6.80	0.22	3.37	3.00-4.33	0.48	**0.005**
	G2	6.63	5.89-8.00	0.57	3.60	2.80-4.40	0.56	**0.005**
	p^2	0.121			0.307			

Abbreviations: *G1 – physiotherapy only, G2 – physiotherapy + relaxation splint, NRS – Numerical Rating Scale.*

Notes: *p^1 difference between the initial and final measurement (Wilcoxon pairwise order test) $p<0.05$, p^2 difference between groups (Mann-Whitney U test) $p<0.05$.*

Discussion

In the case of bruxism, identifying a singular cause for its occurrence proves challenging. Consequently, treatments focusing on a single therapeutic effect often yield limited effectiveness. This underscores the necessity of forming an interdisciplinary team, comprising a dentist, physiotherapist, psychologist, psychiatrist, or other healthcare professionals, to effectively address the patient's problem. The inclusion of a physiotherapist in the specialized team treating bruxism is crucial. However, relying solely on physiotherapy may prove insufficient due to the complex nature of the issue [25].

In our research, soft tissue manipulation techniques were employed as a therapeutic approach. This involved working on the fascia of the face, cervical section, sternum, and chest, along with deep tissue massage, trigger point development, and post-isometric muscle relaxation. Both groups exhibited a significant improvement in the active ROM of the cervical segment in all directions. Ashok et al. [26] also opted for soft tissue techniques and manual therapy in their research. They studied 81 individuals with neck pain, dividing them into three equal groups. The first group received myofascial techniques, the second group underwent muscle energization techniques, and the third group underwent manual therapy based on Maitland's concept. All groups demonstrated improvements in lateral flexion range, as well as enhancements in the neck disability index and proprioception.

In a study by Sharma et al. [27], the effect of post-isometric relaxation of the upper part of the trapezius muscle, combined with massage and ultrasounds, was examined in relation to pain and the range of lateral bending in the cervical section. The authors also assessed the presence of trigger points within the treated muscle post-therapy. Positive outcomes were observed, including pain

relief, increased range of motion, and the elimination of trigger points following the implemented therapeutic program.

The implemented therapy plan yielded satisfactory results, demonstrating statistical significance in the improvement of active mandibular movements in both groups. Additionally, there was a significant reduction in daytime pain among bruxists. Initially averaging 5.3 on the NRS in both groups, the pain levels decreased to 1.70 in Group G1 and 2.00 in Group G2. In a study by Gębska et al. [28], 20 patients experiencing stomatognathic system issues, characterized by muscle stiffness and pain, underwent therapy involving trigger point elimination, soft tissue mobilization within the masseter muscles, and TMJ mobilization. The therapeutic intervention comprised 10 sessions, each lasting 30 minutes. Similar to our research, a significant reduction in pain was achieved post-treatment. The author also observed a noteworthy decrease in masseter muscle activity using electromyography.

The research team led by Gomes et al. [29] evaluated the impact of massage and the use of the Michigan splint on the quality of life and pain in individuals with teeth clenching habits. Subjects were divided into four groups: massage (n=17), Michigan splint (n=19), massage + Michigan splint (n=23), and a control group (n=19). Massage treatment was administered three times a week for four weeks, with each session lasting 30 minutes. In all studied groups, a statistically significant reduction in pain was observed when comparing symptoms before and after therapy [29]. Calisgan et al. [30] combined Proprioceptive Neuromuscular Facilitation (PNF) therapy, myofascial therapy, and home exercises for individuals suffering from bruxism. This comprehensive approach resulted in a significant reduction in pain and the elimination of jaw movement limitations in the first group (n=20). The second group, treated only with myofascial release and exercises (n=15), also experienced a significant reduction in pain and improvement in mandibular mobility.

In our research, a significant reduction in the number of trigger points and the associated pain was observed in both groups (G1 and G2). Other studies have also examined the impact of therapy on trigger points in individuals with bruxism. For instance, Amorim et al. assessed the effect of physiotherapy on muscle pain in bruxists, specifically in the masseter, temporal, upper part of the trapezius muscle, and sternocleidomastoid on both sides. The participants were divided into three groups.

In the first group (n=24), massage and stretching exercises were performed, including both inside and outside the mouth. The exercises targeted muscles in the head and neck area. The second group (n=24) received relaxation and imagination therapy, while the third group (n=24) received dental care only. Physiotherapy sessions occurred twice a week for 6 weeks, with each session lasting 40 minutes. Patient examinations were conducted before the therapy, immediately after its completion, and 2 months later. While the results of this study are yet to be published, the study protocol, registered as a clinical trial on ClinicalTrials.gov under number NCT01778881, suggests the potential role of physiotherapy in alleviating muscle pain in the head and cervical region in people with bruxism [31].

Blasco-Bonora and Martín-Pintado-Zugasti [32] explored the impact of dry needling on the elimination of myofascial trigger points located in the masseter and temporal muscles. Following the applied therapy, the group of bruxists (n=17) experienced a reduction in pain and an improvement in mandibular abduction.

Sahin et al. [33] investigated individuals with TMJ dysfunction. The first group (n=25) underwent masseter muscle trigger point therapy (3 sessions) combined with Rocabado exercises, while the second group was advised to perform exercises only (n=25). Both groups followed the exercise regimen for 4 weeks. In both groups, a significant reduction in pain and an improvement in mandibular ROM for abduction and lateral movements were achieved. Importantly, these were randomized studies.

Study limitations

The data presented strongly support the importance of manual therapy, incorporating soft tissue debridement within the Rocabado exercise program, in addressing symptoms of bruxism. However, it is essential to acknowledge that our own research, conducted on a limited sample of 10 participants per group, provides preliminary insights into certain trends. A critical examination of our project reveals that the assessment of therapeutic effects occurred immediately upon completion, prompting the need to explore the duration of these effects in future studies.

Undoubtedly, patients are keen to understand the duration of therapeutic benefits. Therefore, it is recommended that future research reassesses patients over an extended period. Notably, our research found no discernible difference between groups G1 and G2. While this does not definitively label Michigan splint therapy as ineffective, it prompts reflection on the timing of our assessments, which took place just three weeks post-commencement. A more judicious approach would involve evaluating the splint's effectiveness after a six-month period, considering that patients may still be benefiting from its use.

Future studies could broaden their scope to include a group treated with a repositioning splint, altering TMJ alignment, occlusal height, or mandibular position. Additionally, a focus on the impact of therapy and exercise on the quality of life for patients with bruxism is recommended. While enhancing mobility, strength, and reducing pain are crucial outcomes, the ultimate goal of physiotherapeutic interventions should be the improvement of the patient's participation in everyday, professional, and social spheres.

Conclusions

In summary, physiotherapeutic interventions, encompassing the manipulation of soft tissues and the integration of Rocabado exercises, exhibit a significant ability to improve the active ROM in the cervical and mandibular regions. Moreover, these interventions play a crucial role in alleviating pain and reducing the incidence of trigger points in individuals diagnosed with bruxism.

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