

Analysis of the Effectiveness of Treatments for Temporomandibular Dysfunction - Literature Review

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Abstract

Temporomandibular dysfunction treatment can either reduce the symptoms and correct the dysfunction or cause further discomfort or allow TMD to emerge in patients' daily lives. However, treatments can act on the pain and attempt to correct the teeth in terms of occlusion, with an attempt to repair wear and tear that may have caused this dysfunction. This disorder compromises the quality of life of patients because they have difficulty opening their mouth, making it difficult to perform basic activities such as communicating or eating. The main purpose of this article is to present the most current treatments for this disease. This is a literature review, in which searches were conducted in database platforms such as Scielo, Pubmed and Google Scholar, in which were selected articles published between the years 2012 and 2022, in Portuguese and English. All the studies found showed favorable results to the treatments applied, presenting the possibilities that can be performed with the TMD patient.

Keywords: Treatment. Dentistry. Dysfunction. TMJ

Resumo

O tratamento voltado para disfunção temporomandibular (DTM) levanta apontamentos sobre a possibilidade de reduzir os sintomas e corrigir a disfunção ou causar ainda mais incômodos ou permitir com que a DTM surja no dia a dia dos pacientes. Contudo, os tratamentos podem atuar na dor e na tentativa de corrigir os dentes no tocante da oclusão, com a tentativa de reparar desgastes que podem ter causado esta disfunção. Esta desordem compromete a qualidade de vida dos pacientes pois estes passam a ter dificuldades em abrir a boca, dificultando atividades básicas como se comunicar ou se alimentar e por isso, pode ser preocupante a sua evolução. Este artigo tem como objetivo apresentar os tratamentos mais atuais que estão sendo realizados para tratar esta doença. Trata-se de uma revisão de literatura, no qual foram realizadas pesquisas nas plataformas de bases de dados tais como: Scielo, Pubmed e Google Acadêmico, no qual foram selecionados artigos publicados entre os anos de 2012 a 2022, no idioma português

e inglês. Todos os estudos encontrados apresentaram resultados favoráveis aos tratamentos aplicados, apresentando as possibilidades que podem ser realizadas junto ao paciente de DTM.

Descritores: Tratamento. Odontologia. Disfunção. ATM.

INTRODUCTION

Temporomandibular disorders (TMDs) are abnormalities that affect the opening and closing movements of the mouth and that reduce the quality of life of individuals. They have multifactorial and complex characteristics, which can cause pain, difficulties in opening the mouth and present sounds such as joint clicking. Research indicates that about 75% of the population has some alteration in the temporomandibular joint (TMJ) that can cause changes in the quality of life, such as compromised mouth opening, pain and joint sound, and another 33% present manifestation only of pain. (OKESON, 2013). Treatment aimed at TMD raises points about the possibility of reducing symptoms and correcting the dysfunction or causing even more discomfort, as well as allowing TMD to appear in the daily lives of patients. However, treatments can act on pain and in an attempt to correct the teeth regarding occlusion, with an attempt to repair wear that may have caused TMD. Thus, it is understood that the treatment contributes to the reduction of symptoms that prevent the individual from performing routine activities that require mouth opening, such as eating or talking (TAGKLI et al., 2017). Since Temporomandibular Disorders (TMD) compromises the quality of life of patients as they start to have limited mouth opening, which compromises their daily activities such as talking and eating, making it worrying that the condition worsens in the future without proper treatment. Based on this, the question is: which treatments can be effective against TMD?

The main objective of this article is to present the most current treatments being performed in TMD. As specific objectives, we seek to describe the treatments performed to relieve pain and perform the treatment of TMD.

As a methodology, it is a literature review, in which research was carried out on database platforms such as: Scielo, Pubmed and Google Scholar. For that, criteria of inclusion and exclusion were applied. For inclusion, articles published between the years 2012 and 2022, in Portuguese and English, were selected; On the other hand, as a criterion of exclusion, all articles and reference materials older than 10 years and that do not correspond to the objectives of this research were discarded.

LITERATURE REVIEW

Temporomandibular joint (TMJ)

The temporomandibular joint (TMJ) is made up of various structures, both internal and external, which, in turn, allow for several complex movements to be performed. Thus, the TMJ is aimed at mastication, swallowing, phonation and posture, being described by several authors as the most complex joint in the human body (SANTOS et al., 2020).

According to Neto (2018), the Stomatognathic System - AE, representing as a physiological, functional entity being composed of a heterogeneous set of organs and tissues, whose biology and pathophysiology, since they are absolutely interdependent, related to the functions: speech, chewing, swallowing food, and parafunctional acts. In addition, the neuromuscular system, dental occlusion, periodontium, temporomandibular joint - TMJs, are the four basic physiological units that are part of a functional biological unit of the LA, which also belongs to the other fundamental biological unit, the individual.

Alonso et al., (2014) states that the concept of joint does not only involve the part of the temporomandibular joints, but also the dental joint linked to other components that are part of this same system. Since, the TMJ performs only a function of guiding the mandibular movements, performing its action in a passive way, which in turn needs protection both in opening and closing movements. This protection is offered in parts by the dental joint, which needs the TMJ so that its eccentric movements can take place and collaborate with the dental support system.

In addition, the TMJ makes a connection between the mandible and the skull and allows movements aimed at chewing and speech to be made. Its formation is composed of the head of the mandible which, in turn, fits into the mandibular fossa of the temporal bone, in which the disc is also located joint, separating these bones. Thus, the TMJ ends up becoming a more complex synovial joint in the body and which has exclusive and unique characteristics, focused on the functional, structural, as well as histological point of view. Even though the joint is made up of at least three bones, the articular disc functions as a bone that is not calcified that has some complex TMJ movements (OKESON, 2013).

However, when this joint presents imbalance, both internally and externally, Temporomandibular Disorder (TMD) arises, which has characteristics related to intense pain, which in turn were defined by the American Academy of Orofacial Pain as a set of disorders involving the muscles that are part of mastication, which can be the TMJ or other associations. The possibility of association with other clinical aspects, including pain and psychosocial factors, was verified in several patients who have TMD (PICCIN et al., 2016).

The problems that generate the so-called temporomandibular disorder begin when the harmonic balance of this joint is disrupted. Thus, any factor that changes the elements that make up this system, be they the joints or teeth, as well as the neuromuscular system or ligaments, will directly influence the entire system and this will activate the protection mechanisms (NETO, 2018).

Temporomandibular Disorder (TMD)

Temporomandibular disorder (TMD) is considered as a union of disorders that are focused on the stomatognathic system, involving the muscles of mastication, as well as the TMJ and other associations. TMD causes pain in the orofacial region and therefore is considered as disorders that occur in the skeletal muscle and can compromise other parts, affecting craniofacial and orofacial pain. Within these characteristics, the most relevant symptom is pain, which, in turn, is intense and ends up being felt in the face, jaw, maxilla, pre- or post-auricular, ear and head. Other symptoms also end up

appearing with time, which involves the limitation of the coordination of mandibular movements, as well as the presence of joint noises (SBDTDO, 2014).

These associative factors can result in the imbalance of the stomatognathic system, since the muscles work harder and therefore begin to fatigue, resulting in a change in their function, generating tension, muscle hyperactivity and increased forces, generating pain and discomfort (MOTTA et al., 2013).

As a result, the bony growth zone of the condyle is below the fibrocartilage, allowing this area to be more exposed to the inflammatory lesion. In this way, the TMJ becomes involved by the capsular ligament which is related to the lower part of the condyle and the edge of the temporal bone in its upper part. The joint is divided into two distinct cavities, as the articular disc is located in the capsular ligament and causing this division. Within these inner surfaces, the cavities end up being lined in specialized endothelial cells, forming the synovial membrane.

The lesions that most affect the TMJ are those that cause a change in the positioning of the articular disc as well as the TMJ DAD. Likewise, degeneration related to the soft and hard tissues facing the TMJ constitutes an osteoarthritic condition that may either be related to the local origin or may be a consequence of another disease (WANG et al., 2015).

Thus, although the various inflammatory rheumatic arthropathies can affect the TMJ, the literature describes them as rheumatoid arthritis (RA), juvenile idiopathic arthritis (JIA), as well as spondyloarthropathies and gout. About 86% of RA cases have TMJ involvement, in 87% of these cases occur in children up to 16 years of age (FERRAZ et al., 2012).

In general, temporomandibular disorders are divided into muscular and joint. Among the disorders of muscular origin that occur in the orofacial region, the pain of delayed muscle contraction stands out, which occurs as local muscle sensitivity or non-inflammatory myalgia. Myofascial pain, protective muscle contraction, myositis, myospasm, and contracture are also present. Thus, temporomandibular disorders of joint origin can be divided into others, which are disorders related to other changes in shape, articular disc displacement (with and without reduction), articular disc displacement (with or without reduction), joint displacement (open locking or subluxation), inflammatory conditions, such as synovitis, capsulitis, degenerative conditions, arthritis and arthrosis and ankylosis (bony and fibrous) (MCNEILL, 2013).

Okeson and Leeuw (2015) state that functional disorders of the masticatory muscles are among the most frequent complaints that occur with patients seeking dental treatment. Turning to pain, these disorders are second only to toothache as well as periodontal toothache. They are generally grouped into a category of disorders of the muscles of mastication. Thus, the two symptoms related to TMD functional problems are pain and dysfunction. Patients often describe the pain location as broad and diffuse, as well as bilateral. If the patient describes that there is no increase in this pain associated with mandibular function, it probably may not be related to a muscle problem related to mastication.

Rossi, Stern and Sollecito (2015), state that the mechanisms that lead to pain in the masticatory muscles involve the excessive use of a muscle with normal perfusion or the muscular ischemia of a muscle working normally, the sympathetic reflexes that in turn produce changes in the muscle function. vascular supply and muscle tone, as

well as changes in psychological and emotional state. As a result, the neurons that mediate skeletal muscle pain are subject to modulatory influences. It is understood that neurons that are involved with skeletal muscle pain are focused on modulating influences.

Thus, the symptoms that differentiate the clinical characteristics of TMDs from those with masticatory pain are related to: passively opening the mouth, without pain; sensitivity of the masticatory muscles region; maximum mouth opening performed in a limited way showing deviation.

Current treatments for Temporomandibular Disorders (TMD)

According to Vasconcelos, Venâncio and Silva (2018) some of the treatments aimed at TMDs are: education focused on habits, self-care, medication use, physical therapy activities or techniques, plaques occlusal splints, occlusal therapy, orthodontic treatment, oral rehabilitation, acupuncture, shock waves, laser therapy and, in extreme cases, surgery. However, conservative treatment is the most appropriate to be performed, especially in early cases of TMDs, since it presents good results and is not irreversible.

Only the trained professional can define which treatment is most appropriate for Temporomandibular Disorders (TMD), however this professional in dentistry may need support from other specialized health professionals, such as surgeons. To treat TMD, it may be necessary to use medications, techniques aimed at relaxation, interventions aimed at removing tissues that have become too inflamed, repairing the joints, physical therapy treatments, or even indicating diets with softer foods (BORBA, 2019).

With this, it can be said that the treatments for TMD are varied, depending on the analysis and clinical diagnosis coming from a specialized professional. This broad alternative comes from the fact that TMD is multifactorial, and as a starting point the treatment needs to be conservative, reversible and non-invasive, in the foreground. In this type of treatment, guidelines, pharmacological therapy, self-care, physical therapy, acupuncture, low-level laser therapy, occlusion plate, muscle exercises and manual therapies can be adopted (SASSI et al., 2018).

Occlusal splint

The Occlusal Splint (OP) is a device that has the function of promoting the reduction of all the load that is assigned to the temporomandibular joint (TMJ), in order to reduce the neuromuscular reflex and in order to change the position of the joint. in the articular fossa, thus promoting TMJ recovery. This treatment is usually one of the first alternatives, as it brings with it advantages, one of which is the low cost and has reversible characteristics, it becomes the main option for the treatment of TMD (NISHMOR, 2014; MICHELOTTI et al., 2014).

In this way, occlusal splints are used to promote joint position in an orthopedic way, and can also be used to promote optimal functional occlusion, being able to protect the teeth, as well as support abnormal forces that can wear or destroy the teeth. Thus, various plates can be used for the treatment of TMD, and those aimed at stabilization and anterior positioning are more chosen by professionals in treatments. However, there are other types of plates that are: anterior bite, posterior

bite, pivoting plate, soft or resilient plate. The rigid resin plate was presented by some authors for presenting better results (PORTERO et al., 2019).

Thus, the occlusal splint is an occlusal surface with a superficial structure that is removable, and can be used as an auxiliary form as well as for the treatment of TMDs, protecting the teeth from wear caused by bruxism and causing occlusal stabilization. It can act to relax the muscles of mastication, improving the muscles and bringing pain relief (ABOLREJAL, 2015; DEVI, 2013).

Over the years, occlusal splints have become the therapeutic choice against TMD. The mechanism of operation of these plates is still not well understood, however, it is believed that the improvement in the effects of TMD is related to the changes in the vertical dimension of occlusion, caused by the repositioning of the TMJs, decreasing muscle activity and also because of the patient's own awareness of its use (GROOTEL et al., 2017).

The plates may vary according to the shape, thickness, type of material, period to be used, positioning on the mandibular or maxillary arch, and may or may not require adjustments. The material can be made of resin, which can cover all the teeth or just a few, as in the case of the anterior bite. Despite the benefits related to the use of the occlusal splint, it needs to be used with caution, for short periods of time, otherwise the posterior teeth, without contact, can extrude. The plate has a smooth surface and needs to encircle the entire arc. This alternative is the most chosen by professionals, being a reversible, atraumatic treatment aimed at relaxing the jaw muscles and that allows the TMJ to be decompressed (ALQUTAIBI; ABOALREJAL, 2015).

Low intensity laser

According to Catão et al. (2013), low-intensity laser has collaborated with the reduction of pain, thus promoting a certain comfort to the patient. This feeling of relief happens immediately after application. The biggest advantage of this type of treatment is that it is not invasive, being considered low cost and currently applied in several dental clinics. This treatment reduces the amount of surgery or medication that can be used to reduce TMD pain.

Thus, laser therapy presents itself as a therapeutic alternative for the treatment of TMD because it can be used efficiently for joint pain, neuralgia and paresthesia. The use of laser to treat TMD is justified by its analgesic, anti-inflammatory and tissue repair effects with modulation of cellular activity. The practice of this treatment brings with it metabolic, energetic and functional changes, allowing an increase in cellular resistance and vitality, leading to its normality (PINHEIRO et al., 2017)

Thus, low-intensity laser has helped in the treatment of pain, bringing comfort to the patient after its application, being a non-invasive therapy. Pain relief appears in a few minutes, causing well-being due to its analgesic action of the laser, allowing the patient to perform their daily activities (FIKACHOVA et al., 2016). Its application takes place by performing the application of the laser in the TMJ area, the affected area.

With the reduction of pain, it becomes possible to increase the patient's mouth opening. As the sessions are carried out, there is an evolution in the reduction of muscle pain, and it is possible to measure it through clinical evaluation.

Acupuncture

Acupuncture is a non-invasive means of treating TMD. In addition to having over 2500 years of use, the results can be found in the treatment of various diseases and conditions. Studies indicate that the use of acupuncture has shown the induction of analgesia, protecting the body against infections. Its effectiveness in cases of chronic pain is similar to that of morphine, so acupuncture can be used in the treatment of pain from TMD, improving the quality of life of patients (NOIMAN, 2016).

This counteracting effect occurs because of the millenized nerve fibers of the needled muscles, which in turn send the impulse to the spinal cord, which activates three centers: spinal cord, midbrain, and pituitary-hypothalamus, which in turn causes analgesia. With this, the spinal cord uses enkephalin to block the information that leads to pain (ROSTED et al., 2016).

Garbelotti et al., (2016), states that acupuncture happens when thin needles are introduced into specific points on the body, which are called acupoints. For TMD cases, the point used is IG4, followed by points E6 and E7. In other cases, points ID19 and TA17 were also indicated. However, the most used point is the IG4 which affects the whole body (16). These points contribute to the improvement and reduction of symptoms involving the pain that TMD also brings with it.

According to Garbelotti et al., (2016), acupuncture has been effective within dental treatments, mainly aimed at orofacial pain, idiopathic trigeminal neuralgia, herpes zoster, maxillary sinusitis, as well as dental pain, TMJ arthrosis, as well as as patients who have xerostomia, bruxism and TMD, being also used in other treatments such as anxiety, stress, hypertension. In addition, it has been used in chronic pain that appears even in full treatment using occlusal splints or mandibular physical exercises.

Orthodontic treatment

The relationship that exists between TMD and orthodontic treatment is of great importance, including for public health, as TMD is one of the highest incidences in people who have problems with occlusion. Since, dental malocclusion allows the first symptoms of TMD to occur, so treatments that involve solving this dental problem also helps in the treatment of TMD, as well as occlusion adjustments caused by wear are also causal factors of TMD (PADUA). et al., 2020).

Non-surgical orthodontic treatment involves the use of an appliance that works on the forces that act on the teeth and adjacent structures, which involves the entire dentoalveolar system, thus resulting in tooth movement and other structures, such as the temporomandibular joint. The strength of the ideal orthodontic therapy involves tissue stability, on the other hand, a contrary force can bring unfavorable responses to the biological and fundamental structure, which can trigger adverse reactions (THILANDER, 2019).

As the literature itself shows, orthodontic treatment has the ability to bring to the site a modification of the structure that involves the bone set by the tissues of the face. This process happens through the stimuli, which can be either physical or mechanical, that happens in the teeth (URIAS, 2014).

Crocheting

Crochet is a technique that emerged in the mid-70s from physiotherapy. It consists of a series of hooks used to perform percutaneous diafibrolysis, which is a method that involves mechanical pain of the locomotor system through hooks placed and mobilized on the skin. It is understood that fibrolysis is involving the stretching and breaking of fibers (BAUMGARTH, 2018).

Thus, the hooks used on the patient do not cause pain or injury. The focus is on gaining access to specific muscles that are inaccessible compared to the fingers when they enter the muscle chains. The effects of this treatment act directly on the mechanical, circulatory, reflex and metabolic. As a result, it relieves pain and reduces tissue inflammation (SILVA; VIEIRA; SANTAMARIA, 2018).

It is worth noting the relationship that exists between crocheting and fascia, which is a covering of organs and muscles, involving a fibrous structure that is in turn supported on the skeleton. It is understood that the majority of pain is related to its origin on myofascial tensions, which involves tissue contraction and reduction in the range of motion of a joint. Crocheting works by mitigating or even eliminating most myofascial tensions, allowing the range of muscle movements to increase as well (SOUZA, 2017).

With that, the instruments that are used for this treatment are steel which needs to be treated is the size of the hook. A crochet hook, since the two ends are flat, has the purpose of being able to “catch” the muscle area that needs to be accessed, breaking the tissue adhesion (SANTOS; MEJIA, 2017).

Thus, the movements used for this treatment are based on the principle of centripetal-type movements. The professional needs to seek, far from the region affected by TMD, the injured muscle chains that influence the circulation and neurological capacity of the lesion in order to perform centripetal movements.

DISCUSSION

Daif (2012) conducted a study focused on the use of the occlusal device (occlusal splint) in patients who had problems in the masticatory muscles in TMD and with myofascial pain. There was an 85% reduction in symptoms when this treatment with an occlusal splint was performed.

Some authors made a comparison to validate the effectiveness between a prefabricated occlusal appliance (front plateau) and a stabilization appliance. The first device focused on the short and long term, the second device focused on the long term. The results showed a reduction in myofascial pain associated with TMD (DOEPEL et al., 2012).

In the same way, the occlusal splint was evidenced by a study with 48 patients, which showed that together with physical therapy they present efficient results in the treatment of TMD and present similar results for the myofascial pain variables, causing patients to have significant advances in regarding the condition of this disease (GALVÃO, 2019).

In addition, counseling was presented as a differential treatment, because through what was applied, it was found that the therapy brings efficient returns if applied by professionals who have advanced knowledge in the prevention and

elimination of all factors that collaborate with the disease. etiology of temporomandibular disorder. This education on the part of the patient together with the occlusal device to treat myofascial pain brought results in a short time, presenting itself as efficient for the results, showing that changing habits can also bring positive results in the treatment (MICHELOTTI et al., 2014).

According to samples collected by Shousha et al.,(2021) from 112 women with TMD, applying low-level laser therapy (LLLT), compared with occlusive splint therapy (OST) and using the aperture index of the TMJ (TOI), there was an improvement in the reduction of the effects of this dysfunction in the patients in 95% of the sample and in a short term, with improvements in the TOI.

Similarly, Zhou, Zheng-Xiang and Na-Sha (2018) conducted a survey with 60 people who had temporomandibular joint dysfunction performing manipulative reduction of the cervical vertebrae with Pi needle release. The clicks reduced from 100% to 13.51% after the completion of the treatment in a short time of 24 months.

Butyl toxin has been described as an effective treatment for pain. Data that are proven with the study by Malgorzata, Piotr, Edward (2017) who used botulinum toxin type A, which was applied to the muscles for the treatment of pain. The toxin works to reduce muscle hypertension. Another study to treat TMD pain was carried out by Dickerson et al., (2017), they observed that the combination of exercises aimed at the range of motion of the mouth also collaborated with an improvement in the pain caused by this dysfunction. Shimada et al., (2018), showed that the performance of orofacial myofunctional therapy, which includes passive and active movements in the jaw, has been shown to relieve and reduce pain in the masticatory muscles and also in the TMJ, compared to therapy with splints.

In dry needling therapy, which is a treatment used to inactivate myofascial pain trigger points in patients complaining of orofacial pain, Vier et al., (2019) states that the results were positive, making it an alternative for the treatment of temporomandibular joint dysfunction.

One of the symptoms presented by temporomandibular disorders is tinnitus, and this causes a lot of discomfort to patients, thus needing to start a treatment that can also reduce the effect of this disorder. Micheles et al., (2018) presented in their study the treatment for this disease using stabilization splints along with education aimed at reducing habits such as nail biting or treating bruxism, requiring the combination of dentistry with physiotherapy for the improvement of the patient. In the same vein, Easterbrook et al., (2019) states that to improve the biomechanics of the TMJ, the improvement of the hypertonic muscle needs to be worked on, since with the movements and habits practiced, the TMJ muscles are irritated by the movement of the jaw and cause the pain and discomfort.

Another teaching described by the study by Zhang et al., (2016), showed efficient results when using splints in the treatment of TMD, in a sample of 538 patients with the dysfunction, the splints showed improvement, allowing patients to reach the maximum opening of the mouth, also reducing the pain scale that everyone was presenting before the study. The splints also reduced the click that was a complaint of all patients.

Hyaluronic acid has recently been used for the treatment of TMD, which was performed by Zotti et al., (2019) in which the injection of Platelet Rich Plasma (PRP)

and hyaluronic acid (HA) was chosen because of their effects. regenerative within the joint. The study shows positive results when used in conjunction with other procedures such as arthrocentesis or arthroscopy, showing improvement in pain reduction and mouth opening.

More and more are being reported about acupuncture for the treatment of temporomandibular disorders. In the study carried out with 40 women, using acupuncture, it was shown an improvement in both pain in a short time, being an alternative for the treatment of pain from this dysfunction. With this result, the width of the mouth was also increased (Grillo et al., 2014).

The muscle distraction mobilization technique, presented by Martins et al., (2015) was applied in a 12-week treatment in temporomandibular disorder, presenting in the patient an improvement in pain and mouth opening, showing better results than those presented, in the same research, by the oral device.

In the treatment addressed in 100 participants with TMD, relaxation therapy was used, where physical, functional examinations specialized in the masticatory system were applied. The practice of progressive muscle relaxation therapy has shown efficient results in reducing TMD pain (Ferendiuk et al., 2019).

In a survey of 92 patients hospitalized in the department of surgical dentistry, 46 patients underwent treatment with the traditional method and another 46 with treatment aimed at TMD with the aid of methods that included pharmacological support along with physical therapy. With this, Skrypa (2021) concludes that patients who underwent the treatment proposed by the author, after 12 months, showed effective results in the unilateral expansion of the TMJ joint.

It was also verified in the article by Garbelotti et al., (2016), in the study applied with patients with temporomandibular disorders, that the range of motion improved as serotonin, enkephalin and endorphin were accelerated, with the stimulus performed by acupuncture at specific points. of the human body. As a result showed relaxation in the masticatory muscles and reduction in pain. According to the study presented, the acupoints used were E6, E7, TA21, TA17, ID18 and IG4 (extrafacial). Thus, acupuncture proved to be efficient as a therapy for the treatment of TMD, more precisely in pain relief.

Orthodontic treatment was neither presented as a cause of TMD nor can it be an efficient alternative for treatment, according to Becker (2020). However, occlusion is considered to be a significant factor in temporomandibular disorders due to the position of the teeth, but some authors are still unable to present its connection related to the cause and effects between them, so to diagnose the signs and symptoms of TMD, it is necessary to use RDC/TMD, EVA, BMI and algometer (TANAKA et al., 2016). To analyze the TMD in these cases, tomographic images and magnetic resonance can also be used. In the study by Hu et al., (2017), most women who undergo orthodontic treatment in the research presented were more likely to develop TMD than men, which can be justified by the emotional stress that most women are more likely to experience. likely to feel (QUEIROZ et al., 2015).

From the point of view of Quináia (2020), where a clinical case was carried out, crochet was used in a patient diagnosed with Biarticular TMD and was instructed to undergo orthodontic treatment so that she can correct her occlusion. Along with the occlusal treatment, crocheting was also performed for pain relief. The treatment was

carried out in five stages. At the end of the treatment, the patient had reduced pain and had a greater range of mandibular movement, which before in the anterior opening was only 45.4 mm, later it was 53.4 mm; on the right lateral side, anterior, it was 22.2 mm before, then it changed to 24.4 mm; on the left lateral side, anterior, before it was 21.4 mm, then 22.9 mm; in the opening with side view, before it was 24.8°, then it was 31.4°.

CONCLUSION

The treatment that proved to be more satisfactory in the short and long term for temporomandibular disorders (TMD) was the occlusal splint in conjunction with physiotherapy, as well as professional advice to the patient about harmful habits, where you can treat the cause of this disorder and provide relief. pain in the temporomandibular joint (TMJ) region and allow the patient to have a larger mouth opening, thus leading to an improvement in the patients' quality of life.

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