



The effect of kinesiotaping on temporomandibular joint dysfunction: A literature review

Ms. Marissa De Souza Eremita^{1*}

Department of Physiotherapy, Father Muller Medical College Hospital, Kankanady, Mangaluru – 575002, Karnataka, India.

*Corresponding Author: Ms. Marissa De Souza Eremita

Email id: marissa.desouzae@gmail.com

ABSTRACT

Background

Temporomandibular joint (TMJ) dysfunction is a broad term used to describe various conditions involving the joint like pain, reduced range of motion, stiff muscles of mastication, clicking or popping sensation in the jaw or a change in the way the upper and lower teeth fit together. The major causes for TMJ dysfunction can be myogenous, arthrogenous or due to disc displacement. Management of TMJ dysfunction includes occlusal splints, self care and lifestyle modification. Physiotherapy interventions include biofeedback, TMJ exercises, TMJ mobilization, electrotherapy modalities, splinting, kinesiotaping, and postural correction.

Objective

To review the effects of kinesiotaping on TMJ dysfunction.

Methodology

An extensive literature search was performed on various electronic and print databases like PubMed, Cochrane, Science Direct, Pedro. 888 articles were retrieved based on search strategies in which 5 studies fulfilling the eligibility criteria were reviewed and reported.

Conclusion

Literature review suggests that, kinesiotaping works as an adjunct and helps by reducing pain and increasing the jaw range of motion in individuals, but does not work by itself as a treatment method.

Keywords: Temporomandibular joint dysfunction, Temporomandibular joint disorder, Kinesiotaping, Taping, Jaw dysfunction, Jaw disorder.

INTRODUCTION

Temporomandibular joint is a synovial joint formed between the head of the mandible and the mandibular fossa and the temporal bone without a hyaline cartilage covering the articular surfaces. The parts of the bones that interact in the joint are separated by a small shock-absorbing

fibrocartilaginous biconcave disc which is present between the joint. It has osteokinematic and arthrokinematic movements which are necessary for normal function of the TMJ. Osteokinematic movements include mandibular depression, elevation, protrusion, retrusion and left and right lateral excursions. Arthrokinematic movements

involve rolling, anterior glide, distraction and lateral glide. [1]

TMJ dysfunction is a broad term that is used to describe various conditions involving the joint like pain, reduced range of motion, stiff muscles of mastication, clicking or popping sensation in the jaw or a change in the way the upper and lower teeth fit together [2]. This condition is not of major concern but it can become chronic over time and difficult to manage. Over 25% of the adult population are affected to a certain extent, usually affecting people between 20 and 40 years of age, and is more common in females than males [3]. According to the most recent analyses of epidemiologic data using the Temporomandibular disorder diagnostic criteria, group I (muscle disorders) accounts for 45.3%, group II (disc displacements) 41.1%, and group III (joint disorders) 30.1%. Individuals can have diagnoses from more than one group [4].

Certain risk factors that can cause temporomandibular joint dysfunction are various types of arthritis, any jaw injury, clenching of the teeth or overuse [5]. TMJ dysfunction can develop following physical trauma, for example, whiplash injury or it could be idiopathic. The major causes for temporomandibular joint dysfunction can be myogenous, arthroogenous or due to disc displacement [2, 6]. Myogenous- masticatory muscle dysfunction, myofascial pain; Arthroogenous- arthritis (osteoarthritis and rheumatoid arthritis) or arthrosis [2]. The muscles of mastication are present on both sides and work together to produce the movements of the jaw. The main muscles are the masseter, temporalis and medial and lateral pterygoid muscles. Based on the movements of the jaw the lateral and medial pterygoid help in protrusion, posterior fibres of temporalis help in retraction, anterior and middle fibres of temporalis, the superficial and deep fibres of masseter and the medial pterygoid help in elevation of the mandible, lateral movements are caused by the medial and lateral pterygoid muscles [1]. The cardinal signs and symptoms seen are pain and tenderness on palpation of the muscle or the joint, restricted or reduced range of motion of the jaw, clicking or popping sound or feeling of crepitus during movement [2]. Other signs and symptoms seen are headache, dizziness, upper neck pain, ear ache, inability to eat or talk, tinnitus or a

feeling of malalignment of the upper and lower dentition [6].

Various treatment options are available for temporomandibular joint dysfunction, such as occlusal splints. Self-care education and lifestyle changes like avoiding repetitive movements or avoiding clenching or tensing of the jaw. Analgesics can be given to reduce pain. Surgery is attempted if the dysfunction is chronic and does not resolve with conservative management [2]. Physiotherapy interventions include biofeedback, temporomandibular joint exercises like relaxation exercises, jaw strengthening exercises, stabilization exercises, stretching exercises, temporomandibular joint mobilization, trigger point release, moist heat or cryotherapy to reduce pain, electrotherapy modalities, splinting, kinesiotaping, dry needling, postural correction [6].

Kinesiology tape is a stretchy, thin, elastic cotton strip with an acrylic adhesive. Therapeutic kinesiology tape can be used for a variety of musculoskeletal and sports injuries, any physical disorders and inflammatory conditions [7]. Kinesio Taping Method is a rehabilitative taping technique that is used to facilitate a natural healing process while providing support and stability to muscles [3] and also providing extended soft tissue manipulation to prolong the benefits of manual therapy that is administered.

Taping has the ability to reduce pain and inflammation, re-educate the neuromuscular system, prevent injury, optimize performance, and promote good circulation and healing. It has a positive physiological effect on the skin, lymphatic and circulatory system, fascia, muscles, ligaments, tendons, and joints [8]. It normalises the muscle tension, supports the joint during movement, helps in improving the function of the weakened muscle and improves the microcirculation at the site of application [2]. The other benefits include reducing the pain intensity and causing a change in the recruitment activity pattern of the muscle being treated [9]. It can be used together with other treatment methods and modalities and is effective during the rehabilitative and chronic phases of an injury and is also used for preventative measures [8]. In temporomandibular joint dysfunction, kinesiotaping can be used to prevent or treat jaw dislocations, reduce pain, release trigger points, or work like an oral splint. Kinesiotaping can be used by itself as an intervention or it can be used

together with other physiotherapy interventions like strengthening exercises, mobilization and manipulation, pain modalities, trigger point release, or splinting. This study is aimed at reviewing the effects of kinesiotaping on temporomandibular joint dysfunction.

MATERIALS AND METHODS

Design: Literature review. An extensive literature search was performed on various electronic and print databases like PubMed, Cochrane, Science Direct, Pedro. 888 articles were retrieved based on search strategies in which 5 studies fulfilling the eligibility criteria were

reviewed and reported, which included 2 randomised controlled trials, 2 comparative studies and 1 case report. Inclusion criteria: Articles in English language and articles since 2014. Exclusion criteria: Non-English language articles, studies done on animals and articles without full text accessibility. A literature search was conducted using the above mentioned databases using search strategies and key words. A total of 888 articles were retrieved. The three step process- title, abstract, full text was used to select articles: Based on the title 7 articles were obtained. Based on abstract 5 articles were obtained and using eligibility criteria and free full text availability 5 articles were selected for review.

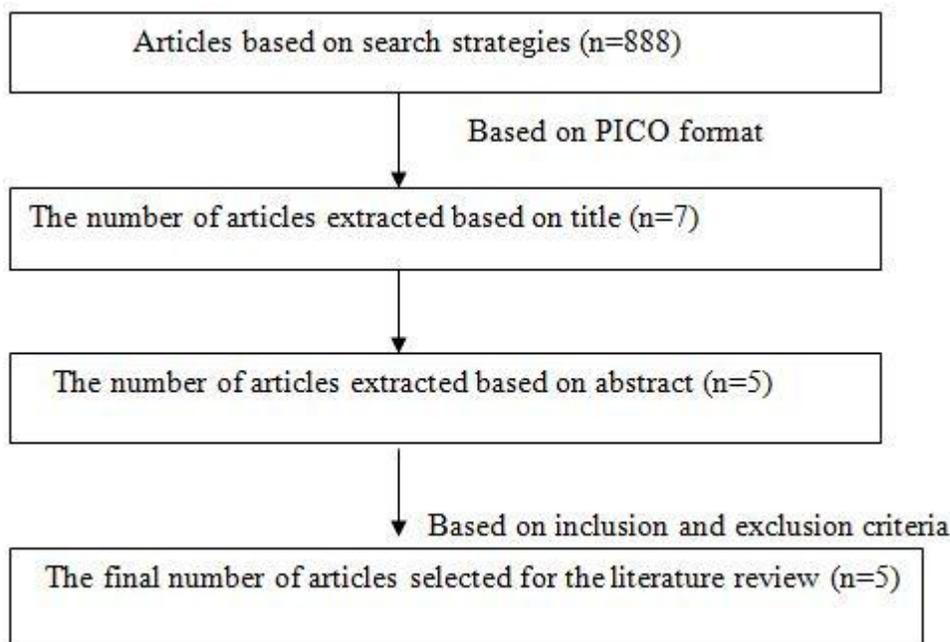


Figure 1: Flowchart of data extraction

RESULTS AND DISCUSSION

Results

Kinesiotaping, as an adjunct, helps in reducing pain and increasing the jaw range of motion in individuals.

Table 1: Summary

| TITLE/ AUTHOR/ YEAR OF STUDY | TYPE OF STUDY | SAMPLE SIZE | OUTCOME MEASURES | RESULT | PEDro SCORE |
|---|-----------------------------|----------------------------------|---|---|-------------|
| The effectiveness of kinesiotaping on temporomandibular joint dysfunction | Randomised Controlled Trial | N= 37 Experimental group N=14 | Behavioural questionnaire Active jaw movements | Improvement in active mouth opening, Visual Analog Scale for temporomandibular joint, masticatory efficiency and functional limitation, and | 7/10 |
| Ilke Coskun Benlidayi | Level of evidence : 1b | Control group | | | |

| | | | | | |
|--|-----------------------------|---|---|--|------|
| et al [2] | | N= 14 | Visual Analog Scale | reduction in pain, depression and disability was found in the experimental group than the control group. | |
| 2016 | | | Self-reported measures for functional limitation and masticatory efficiency | | |
| Assessment of the Short-Term Effectiveness of Kinesiotaping and Trigger Points Release Used in Functional Disorders of the Masticatory Muscles | Randomised controlled trial | N= 60 Group Kinesio tape = 15 men and 15 women Group Trigger point release= 14 men and 16 women | Visual Analog scale | Greater reduction in pain in the Kinesiotaping method. | 4/10 |
| Danuta Lietz-Kijak et al [3] | | | | | |
| January 2018 | | | | | |
| Effect of taping in reduction of temporomandibular joint dislocation | Case report | N=1 | Assessment of Range of Motion | Reduction in pain and improvement in range of motion | N/A |
| Satish Kumar Anumula et al [9] | | | Visual Analog Scale | | |
| January 2017 | | | | | |
| Comparision of the effect of oral splinting and kinesiotaping in temporomandibular joint pain | Comparative study | N= 69 Oral splint group= 35 Kinesiotaping group= 34 | Range of motion measured by distance between Upper and lower incisives | Pain decreased and range of motion increased in both the groups | 6/10 |
| K. Baklaci [10] | | | | | |
| 2016 | | | | | |
| Comparision of the effect of kinesiotaping and oral splinting in the management of myofascial pain in patients with sleep bruxism. | Comparative study | N=34 Group 1 (kinesio group)= 16 Group 2(splint group)= 18 | Visual Analog Scale Visual Analog Scale Mouth opening measurement Pain threshold for the | Reduction in muscle pain, decrease in Visual analog scale values, and increased mouth opening measurements in both the groups. The values of the pain | 6/10 |

Aydin Keskinruzgar et al [11]

2018

temporalis and masseter muscle by algometer.

threshold for the temporal muscle were higher in the kinesiio group at the 1st week of treatment.

DISCUSSION

The study was aimed at reviewing the potential effects of kinesiotope on temporomandibular joint dysfunction. Five studies comprising of 2 Randomised Controlled trials, 2 comparative studies and 1 case report were included. The use of Kinesiotope (KT) as an adjunct with other methods was found to be effective in patients and, when compared with oral splints, it was as useful as splints along with minor added benefits.

Anumula SK et al [9] states a relationship between the cutaneous afferent stimulation and motor neuron firing. It is said that taping can also be used improve the proprioception by increasing the stimulation of the mechanoreceptors on the skin and strengthen the weak muscles. KT plays a major role in reduction of pain. This is achieved by the lifting action of the tape which relieves the pressure on the pain receptors. Ilke Coskun Benlidayi et al [2] hypothesized that KT along with counselling and exercise is more effective than counselling and exercise alone. Conclusion drawn was while exercise and counselling showed improvement; there was a significantly higher benefit in short term and long term results when Kinesiotope was applied compared to exercise and counselling

alone. The Kinesiotope provided additional pain relief which was not achieved by exercise alone and this turn allowed the patient to perform range of motion exercises without pain thus further increasing the range and many other authors have also proved that using kinesiotope benefits the patient with respect to reduction of pain. Another example is a comparative study conducted by Aydin Keskinruzgar et al [11] which showed that there was no significant difference found at the end of the treatment in Visual Analog Scale values, mouth opening measurements between both the groups, but the values achieved for the pain threshold for the temporal muscle was higher in the kinesiio group [11]. In addition to reducing pain, it was an easy to apply non-invasive method which did not interrupt daily oral activities [10].

CONCUSION

The current review suggest that, kinesiotope, as an adjunct, helps in reducing pain and increasing the jaw range of motion in individuals. Future studies need to be done to investigate the beneficial effects of kinesiotope as a treatment method by itself or as an adjunct.

BIBLIOGRAPHY

- [1]. Levangie PK, Norkin CC. Joint Structure and Function: A comprehensive analysis. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 5, 2012
- [2]. CoskunBenlidayi I, Salimov F, Kurkcu M, Guzel R. Kinesiio Taping for temporomandibular disorders: Single-blind, randomized, controlled trial of effectiveness. *Journal of back and musculoskeletal rehabilitation*. 29(2), 2016, 373-80.
- [3]. Lietz-Kijak D, Kopacz Ł, Ardan R, Grzegocka M, Kijak E. Assessment of the short-term effectiveness of kinesiotope and trigger points release used in functional disorders of the masticatory muscles. *Pain Research and Management*. 2018.
- [4]. Manfredini D, Guarda-Nardini L, Winocur E, Piccotti F, Ahlberg J, Lobbezoo F. Research diagnostic criteria for temporomandibular disorders: a systematic review of axis I epidemiologic findings. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 112(4), 2011, 453-62.
- [5]. Mayo Clinic Mayo Foundation for Medical Education and Research (MFMER); 2018 Available from: <https://www.mayoclinic.org/diseases-conditions/tmj/symptoms-causes/syc-20350941>
- [6]. Miller J. *Physio Works* John Miller; updated 2019. Available from: https://physioworks.com.au/injuries-conditions-1/tmj_dysfunction
- [7]. *Physio Works*. *Physio Works*; Available from: https://physioworks.com.au/Injuries-Conditions/Treatments/Kinesiology_Taping 2018.

- [8]. Tape R. What is The Kinesio Taping® Method?. What is KT Tape. 2010.
- [9]. Anumula SK, Beku C, Raj M Reduction of Temporomandibular Dislocation: A Case Report. *PhysiotherRehabil* 2, 2017, 127.
- [10]. Baklaci K. Comparison of Oral Splinting and Kinesiotaping in Temporomandibular Joint Pain. *Physical Medicine and Rehabilitation, TAF Health Command*. 2016.
- [11]. Keskinruzgar A, Kucuk AO, Yavuz GY, Koparal M, Caliskan ZG, Utkun M. Comparison of kinesio taping and occlusal splint in the management of myofascial pain in patients with sleep bruxism. *Journal of back and musculoskeletal rehabilitation*. 2019, 1-6.

How to cite this article: Marissa De Souza Eremita. The effect of kinesiotaping on temporomandibular joint dysfunction: A literature review. *Int J of Allied Med Sci and Clin Res* 2020; 8(2): 185-190.

Source of Support: Nil. **Conflict of Interest:** None declared.