

THE EFFECTIVENESS OF BOWEN TECHNIQUE AS AN ADJUNCT TO CONVENTIONAL PHYSIOTHERAPY ON PAIN AND FUNCTIONAL OUTCOMES IN SUBJECT WITH ACUTE TRAPEZITIS – A PILOT STUDY

EFICIENȚA TERAPIEI BOWEN CA ADJUVANT ÎN FIZIOTERAPIA CONVENȚIONALĂ A DURERII ȘI FUNCȚIEI, LA SUBIECȚII CU TRAPEZITĂ ACUTĂ – STUDIU PILOT

Peeyoosha Nitsure¹, Neha Kothari²

Keywords: trapezitis, conventional physiotherapy, Bowen technique

Cuvinte cheie: trapezită, terapie convențională, terapia Bowen

Abstract

Background: Trapezitis is an inflammation of trapezius muscle that is commonly seen in clinical practice. Various physiotherapy techniques have shown to be effective in Trapezitis. Although the Bowen technique is indicated in Trapezitis, there is dearth in literature to confirm its effectiveness through scientific studies.

Objective: To evaluate the effect of Bowen Technique as an adjunct to the conventional physiotherapy treatment on Trapezitis in terms of pain, disability and cervical range of motion.

Design: Pilot study

Participants: 15 participants both male and female with Acute Trapezitis.

Intervention: Bowen technique given along with Ultrasound, Trapezius stretching and neck strengthening exercises.

Outcome measures: Visual Analogue scale, Neck Disability Index, Cervical rotation Active Range of Motion.

Results: The mean difference between pre and post treatment values for VAS, NDI and cervical rotation ROM was 5.25 ± 1.40 , 24.60 ± 5.19 and 22 ± 8.25 . All outcome measures were statistically significant ($p < 0.05$) and showed improvement for all the participants

Conclusion: Bowen technique is effective in reducing pain, improving ROM and reducing neck disability in patients with Acute Trapezitis.

Rezumat

Introducere: Trapezita este o inflamație a mușchiului trapez, foarte frecventă în clinică. Numeroase tehnici fizioterapeutice s-au dovedit a fi eficiente în acest caz. Cu toate că tehnica Bowen este indicată în trapezită, nu există studii care să îi ateste eficiența.

Obiective: Evaluarea eficienței tehnicii Bowen ca adjuvant al fizioterapiei în trapezită, în ceea ce privește durerea, disabilitatea și mobilitatea cervicală.

Design: studiu pilot

Participanți: 15 participanți, bărbați și femei cu trapezită acută.

Intervenție: Tehnica Bowen alături de ultrasunet, stretchingul trapezului și exerciții de tonifiere a gâtului.

Mijloace ede evaluare: Scala Analog Vizuală, Neck Disability Index, mobilitatea activă de rotație cervicală.

Rezultate: Diferența medie dintre valorile pretest și posttest pentru VAS, NDI și rotația cervicală activă a fost 5.25 ± 1.40 , 24.60 ± 5.19 și 22 ± 8.25 . Toate rezultatele au fost semnificative statistic ($p < 0.05$), demonstrând îmbunătățirea parametrilor evaluați la toți pacienții.

Concluzii: Tehnica Bowen este eficientă în reducerea durerii, creșterea amplitudinii de rotație cervicală și reducerea disabilității, la subiecții cu trapezită.

¹ MPT, Assistant Professor, Dept of Orthopaedic P.T, KLEU Institute of Physiotherapy, Belagavi-590010, Karnataka, India.

Correspondent author: E-mail id: peeo123@yahoo.com

² Post Graduate Student, Dept of Orthopaedic P.T, KLEU Institute of Physiotherapy, Belagavi -590010, Karnataka, India. E-mail: nehakothari.ytl@gmail.com

Introduction

The skeletal muscle is the single largest organ in human body. It accounts for nearly 50% of the body weight. Any of these muscles may develop pain and dysfunction.[1] There are many epidemiologic studies suggesting that myofascial pain syndrome is an important source of musculoskeletal dysfunction.[2]The prevalence of this syndrome has increased dramatically in recent years and is foremost among the causes of musculoskeletal pain.[2,3]The prevalence varies from 21% of patients seen in a general orthopedic clinic to 30% of general medical clinic patients. The regional pain prevalence is 85% to 90% of patients presenting to pain management centre. Women and men are affected equally.[4]In modern society myofascial pain is a major cause of morbidity. It may be present as a regional musculoskeletal pain, as neck or back mimicking radiculopathy.[1]

The trapezius muscle is an inverted triangle starts at the base of the skull, spreads over the shoulders and down to the mid back.[5] The trapezius muscle is divided into three areas upper fibres, middle fibres, lower fibres.[5]It has several functions such as to move the shoulder blade in toward the spine, to rotate the shoulder blade so that the top most part of the upper arm faces up, to move the shoulder blade up and down, to bring the head and neck in a backward direction, to rotate and side bend the neck, to assist in breathing. Since the trapezius muscle works to move the neck in several directions ,its degree of tightness or looseness affects neck flexibility.[6]

Trapezitis is defined as inflammation of Trapezius muscle which involves myofascial pain syndrome.[7,8]The upper trapezius muscle is designated as postural muscle and it is highly susceptible to overuse. The pain is present even during rest and is aggravated by activity; it may be referred to another area from the site of primary inflammation[7].

Myofascial trigger point is a hyperirritable spot found within the taut band of skeletal muscle. In the modern computerised world we are facing more frequent musculoskeletal problems like trapezitis, joint pain , and other neck related conditions[9].

Passive range of motion may be painful and restricted due to pain and protective spasm in antagonist groups of muscles.[7] The excessive physical strain may cause microtrauma in connective tissues. The principle muscle to carry a load is the trapezius. Any position which places trapezius in a shortened state for a period without rest may shorten the fibres and lead to dysfunction and restricted movements of neck.[10]Recent studies have hypothesized that pathogenesis of trapezitis results from the overloading and injury of muscle tissue, leading to involuntary shortening of localized fibres. The areas of stressed soft tissue receive less oxygen, glucose and nutrients and subsequently accumulates high levels of metabolic waste products. The end result of this cascade of events is the creation of altered tissue status, pain and the development of Trigger points.[7]

Various physiotherapy techniques shown to be effective in trapezitis like rest, heat, Ultra-Sound[10], MWD[10], TENS[10], spray and stretch[10], and post- isometric relaxation manual therapy like MFR[11],MET[12], positional release are also effective in treatment of trapezius spasm. Treatment of trapezitis requires a multifaceted approach. In the short term, the aim is to abolish the taut bands, trigger points and tender points for pain relief. In the long term, flexibility has to be restored to the muscle so as to reduce the recurrence rate.[1]

Therapeutic ultrasound treatment is one of the most important physical therapy treatment modality in myofascial trigger points treatment is used for heating deep tissues. It is a non-invasive method which consists of piezoelectric crystals that convert the electrical energy to mechanical oscillation energy using high-frequency alternating current. US increases local metabolism, circulation, regeneration and extensibility of connective tissue with its assuming thermal and mechanical effects.[13]

Bowen Technique

There is one more proposed soft tissue technique named as Bowen Technique that is indicated in the myofascial pain but there is a paucity of literature proving its effectiveness.

The Bowen Technique is a dynamic system of muscle and connective tissue therapy that was developed by the late Tom Bowen in Geelong, Australia in the year of 1950. It utilizes subtle inputs to the body (known as moves), stimulating the body to heal itself, often profoundly.[8] A typical Bowen technique session lasts from 15-45 min it consists of several sets of moves. The Bowen moves are gentle but purposeful.[8] When executing a Bowen Move away from the patient's body we generally use the thumb, while executing a move toward the patient's body, we generally use two fingers. The technique can be used on the origin or the insertion of a muscle, the belly of the muscle itself. There is both a physical action and an energetic action.[9]

It can provide relief for many types of injuries and other health problems, both acute and chronic, and it does so holistically, via the body's innate healing mechanisms. It has been recommended in many conditions like whiplash, cervical and back pain, herniated disc, headache, tennis elbow, hamstring tightness, frozen shoulder and TMJ dysfunction.[8] Therefore, the purpose of the study is to study the effect of Bowen Technique on trapezititis.

Material and methods

This study was a pilot study and received ethical approval from the Institutional Ethical Review Board KLE University Belgaum, Karnataka, India. The 15 participants were recruited from Tertiary Care Hospital at Belagavi city. All participants gave informed consent to participants in the study.

Inclusion Criteria were: Both male and female subjects clinically diagnosed with Acute Trapezititis within age group of 20-45 years and those willing to participate. The exclusion Criteria for the study were Traumatic Neck Injury, Fracture of cervical vertebra, Cervical Spinal Cord Compromise, Cervical Radiculopathy, Spondylolisthesis of the cervical spine.

Outcome measures were:

- Visual Analogue Scale (VAS)
- Cervical Rotation Range of Motion (CROM)
- Neck Disability Index (NDI)

Visual analogue scale: Pain intensity was evaluated by means of VAS, a line of 10 cm ranging from 0 cm to 10 cm was drawn, where the subjects has to mark a point according to their pain level, where 0 represents No Pain and 10 represents Unbearable Pain.[14]

Cervical range of motion: The universal goniometer was used to measure the cervical rotation range of motion of opposite side. [15] The Values were noted in Degrees

Neck disability index: The participant's functional status is assessed by means of the Vernon Neck Disability Index (NDI). It is a 10-item questionnaire .The score of each item lies between 0 (no pain or limitation in activities) and 5 (as much pain as possible or maximal limitation). Total scores range between 0 and 50 points. [16]

Procedure

Before the intervention the pain intensity was documented on visual analogue scale (VAS) then Cervical Range of Motion (CROM) was measured. Neck Disability Index questionnaire (NDI) were provided to the subject. The questions on the scale were explained in detail and the subjects were then asked to choose the most appropriate alternative.

The participants received the following interventions.

1. Therapeutic ultrasound :- U/S head size- 1cm, mode- continuous , Intensity- variable according to pain threshold but within 1.5 watts/cm², Range- 0.1 to 1.5 watts/ cm², Treatment time- 5 mins and patient position- sitting[13] and
2. Trapezius stretching advised as home exercise (5 sec hold for 5 repetitions)
3. The conventional treatment was given for five sessions every day.

Bowen technique was given in the following steps:

- 1) The patient position was prone lying with small pillow for neck support.
- 2) Place the thumb on the affected side muscle.
- 3) Hook the thumb on the lateral edge of the muscle to form pressure against the muscle.
- 4) Create a slight pause as the nervous system registers a tension.
- 5) As the thumb begins to flatten in a medial direction, the muscle will pluck or plop or respond in some manner.
- 6) Carry the skin and challenge the muscle first with the thumbs followed by the fingers.
- 7) The hands are place with an inch of space between the thumbs and fingers so that the hands can play the muscles simultaneously.[8]

Treatment time - 20mins alternate day (3sessions)

Statistical Analysis

The results of statistical analysis were expressed as mean \pm SD (Standard deviations). The paired t test was used to calculate the pre and post differences between the outcome variables. The significance level of p value less than 0.05 was used for all comparisons. All analysis was performed using GraphPad InStat 3 software.

Results

The age of the participants choose for study was between 20 years and 45 years. The average age of participants was 27.8 ± 6.3 years. There were total of 15 participants in study. (7 males, 8 females) The mean Body Mass Index score was $26.03 \pm 3.67 \text{kg/mt}^2$.

The mean VAS score for pre intervention was 8.40 ± 1.04 and the post intervention score was 3.15 ± 0.87 . The t value was 16.65 with p value of <0.0001 which was statistically significant. (Graph 1) Decrease in scores indicate better outcome.

The mean pre intervention score for cervical rotation range of motion (CROM) was 15.10 ± 6.71 whereas post intervention score was 39.70 ± 4.01 . The t value was 18.62 and p value was < 0.0001 which showed to be statistically significant. (Graph 2) The increase in Scores indicate better outcome.

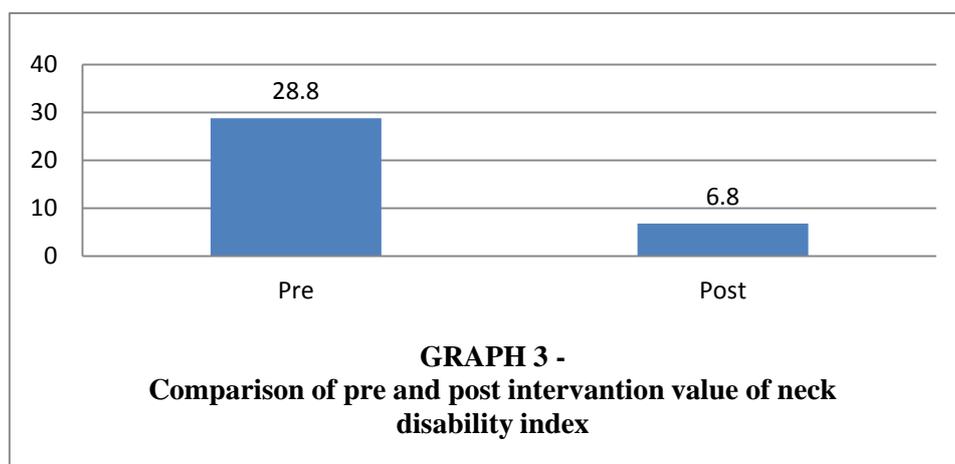
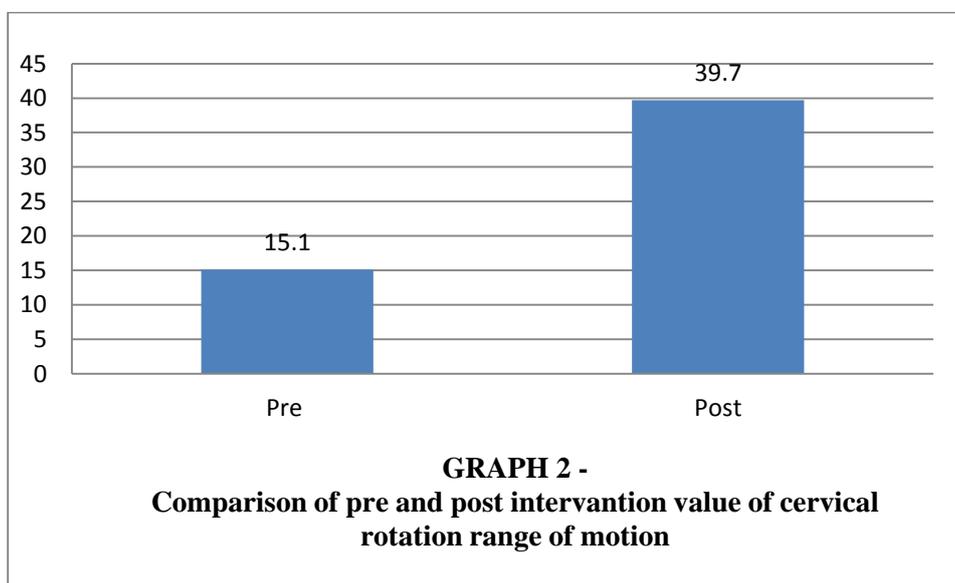
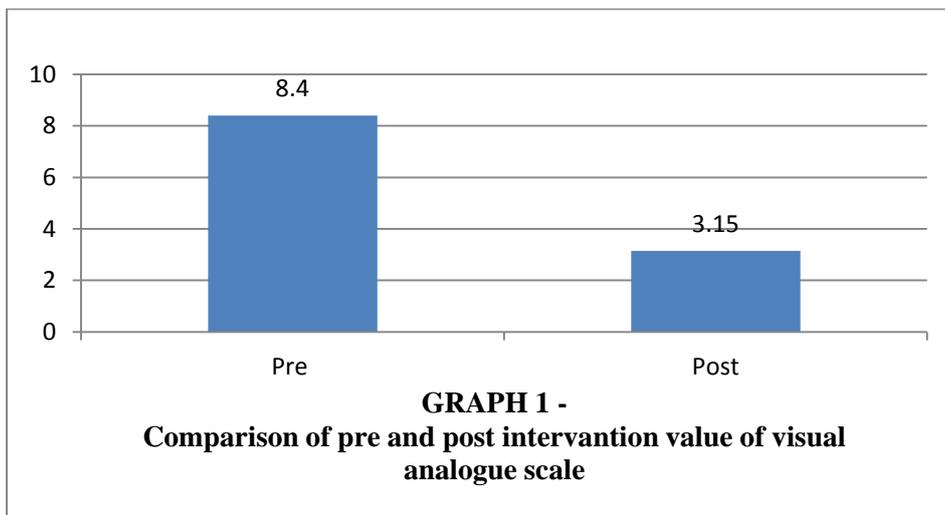
The mean neck disability index (NDI) values for pre intervention were 28.80 ± 7.55 while post intervention mean value was 6.80 ± 2.70 . When comparison of pre and post intervention values was done the t score was 11.91 and p value was <0.0001 which can be inferred as statistically significant. (Graph 3) The decrease in scores indicate better outcome.

Hence, it can be inferred by the Table 1 that Bowen technique along with the conventional physiotherapy was effective for improving all the outcome measures.

TABLE 1: Comparison of VAS, CROM and NDI

Outcome Measures	Pre-treatment	Post-treatment	Mean Difference	t Value	p Value
	Mean \pm SD	Mean \pm SD	Mean \pm SD		
Visual Analogue Scale	8.40 ± 1.04	3.15 ± 0.87	5.25 ± 1.40	16.65	0.0001 ⁺
C-ROM*(rotation to non-affected side)	15.10 ± 6.71	39.70 ± 4.01	24.60 ± 5.90	18.62	0.0001 ⁺
Neck Disability Index	28.80 ± 7.55	6.80 ± 2.70	24.85 ± 1.84	11.91	0.0001 ⁺

*C-ROM – Cervical Range of Motion ; +: Statisticallly Significant



Discussion

The present study is the first pilot study to find the effectiveness of Bowen technique on pain and functional outcome in subject with Trapezitis.

The outcome measures of this study were VAS, CROM and NDI all showed improvements in all measure after treatment when compare to before treatment values. None of the participants reported aggregates in symptoms.

Bowen therapy was originally developed by an Australian, Mr Tom Bowen 1970. It is a gentle and relaxing cross fibre movements approach to release tension in fascia and musculoskeletal system to promote the flow of blood and lymph and there by assist the body to restore structural integrity and optimal function.

Bowen technique shows significant reduction in pain, improvement in CROM and neck disability. This effect can be attributed to the fact that Bowen therapy works through muscle reflexes to alert the central nervous system to release tension in areas that are holding more tension and tone in order to restore a proper resting muscle tone. There are responses triggered by such simple process and then end results is a lessening of pain and tension cycles and return to more optimal function. Fascia has a ubiquitous distribution that permeates the human body, forming a continuous matrix of structural support, serving different functions. [17]

A randomized control study done by Michelle Marr et al in 2010 on the effects of Bowen on hamstring flexibility revealed significant within-subject and between-subject differences for the Bowen group. There was significant improvement in flexibility levels observe over one week. No significant change over time was noted for the control group. [18]

A study was done by B.Carter et al to evaluate the effectiveness of Bowen Technique in the management of frozen shoulder in terms of their pain, functional ability and well-being and concluded that there was improvement in shoulder mobility and associated function for all participants and Bowen Technique demonstrated an improvement for participants, even those with a very longstanding history of frozen shoulder. [19]

The present study showed significant improvement in VAS, CROM and NDI as compared with previous study it is also showing positive results.

The thermal effect of ultrasound upon tissue; include increased blood flow, reduction in muscle spasm, increased extensibility of collagen fibres and pro inflammatory response may also help improve condition all participants received conventional therapy ; thus , it may be difficult to separate additive effect of Bowen technique on Trapezitis. Hence future trial are recommended.

Limitations

The limitations of the present study were it was single centric and single group clinical trial. The sample size was small. The future scope of the study is that it can be done with larger sample size with long term follow up.

Conclusion

Based on the results of present study, it can be concluded that Bowen technique can be used as an effective adjunct to the conventional physiotherapy treatment in subjects with Acute Trapezitis. However, it is suggested that in future more Randomized clinical or controlled trials need to be done to confirm effectiveness of Bowen Technique as an independent therapy.

References

- [1] Eng-Ching Yap. (2007), Myofascial Pain – An Overview, *J. Annals Academy Of Medicine A* ;1:36.
- [2] Cesar Fernandez Las Penas, Monica Sohrbeck Campo, Josue Fernandez Carnero, Juan Carlos Et.Al.(2005), Manual Therapies In Myofascial Trigger Point Treatment: A Systemic Review, *Journal Of Bodywork And Movement Therapies*; 9: 27-34.
- [3] Umit Dundar, Ozlem Solak, Vural Kavunc(2010), Effectiveness Of Ultrasound Therapy In Cervical Myofascial Pain Syndrome: A Double Blind, Placebo- Controlled Study, *Turk J Rheumatol*; 25:110-15.
- [4] Joanne Borg-Stein. (2006), Treatment of Fibromyalgia, Myofascial Pain & Relate Disorders, *Phys Med Rehabil Clin N Am*; 17: 491-510.

- [5] Richard L. Drake, A. Wayne Adam et al. *Gray's Anatomy* 2nd Edition; Page No 89
- [6] Johnson G, Bogduk N, Nowitzke A, House D. (1994), Anatomy And Actions Of The Trapezius Muscle, *Clinical Biomechanics*; 9(1):44-50.
- [7] Carvalho S, Babu V, Kumar S, Ayyapan.V . R.(2014), Effect Of Positional Release Technique In Subjects With Sub-Acute Trapezitis, *Int J Physiother*; 1(2):91-99.
- [8] Rajalaxmi.A, Kumar. S, Shaker. I.(2013),Effect Of Transcutaneous Electrical Nerve Stimulation and Trapezitis,*International Journal Of Physiotherapy And Research*;1 (5):205-7.
- [9] Travell J.G, Simons D.G.(1983), *Background And Principles In Myofascial Pain And Dysfunction-The Trigger Point Manual-The Upper Extremities*, Baltimore ,Williams And Wilkins;1: 183-192 .
- [10] Kumaresan A, Deepthi G, Anandh V, Prathap S. (2012), Effectiveness Of Positional Release Therapy In Treatment Of Trapezitis,*International Journal Of Pharmaceutical Science And Health Care*;2,(1).
- [11] Ekta Chaudhary, Nehal Shah, Neeta Vyas Et.al (2013),Comparative Study Of MFR And Cold Pack In Upper Trapezius Spasm,*IJHMR*; 3 (12): 20-27.
- [12] Rich M ,Chitra K., Kshitija B et.al (2012)Comparative Effectiveness Of MET And Static Stretching For Treatment Of Subacute Mechanical Neck Pain, *Int J Health Rehabil Sci*;1(1): 16-24.
- [13] Kannan P.(2012) Management Of Myofascial Pain Of Upper Trapezius: A Three Group Comparison Study, *Global Journal Of Health Science*; 4(5).
- [14] Paul S. Myles, Sally Troedel, Michael Boquest, Mark Reeves. (1999),The Pain Visual Analog Scale: Is It Linear Or Nonlinear?,*International Anaesthesia Research Society*;89:1517-20.
- [15] Araya Yankai, P. Manosan.(2009) Reliability Of The Universal And Invented Gravity Goniometers In Measuring Active Cervical Range Of Motion In Normal Healthy Subjects,*International Journal Of Applied Biomedical Engineering*;2:49-53.
- [16] Birgitta Helmersson Ackelman, Urban Lindgren. (2002), Validity And Reliability Of A Modified Version Of Neck Disability Index,*J Rehabil Med*; 34: 284–87.
- [17] ****Bowen Therapy – A New Treatment Modality For Pain Management In Occupational Therapy*, Bowen Therapy Special Interest Group, Hong Kong Occupational Therapy Association.
- [18] Michelle Marr, Julian Baker, Nicky Lambon et. al.(2011) The Effect Of The Bowen Technique On Hamstring Flexibility Over Time, *Journal Of Bodywork And Movement Therapy*;15 :281-290.
- [19] B. Carter. (2001), Effectiveness of Bowen Technique In The Management Of Clients Frozen Shoulder, *Complementary Therapies In Medicine*; 9, 208-215.