



Effect Of Muscle Energy Technique And Bowen Technique On Neck Disability And Pain In IT Professionals With Subacute Trapezitis: A Comparative Study

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Abstract: Work-Related Musculoskeletal Disorders are common among IT professionals due to prolonged sitting, repetitive tasks, poor ergonomics, often resulting in neck pain from trapezititis. This condition, caused by inflammation and muscle spasms in the trapezius, leads to pain, stiffness, and reduced mobility, affecting productivity. Effective treatments, including Muscle Energy Technique (MET) and Bowen Technique (BT), help relieve pain and improve function. MET uses controlled muscle contractions to release tension, while BT is a gentle manipulation technique promoting relaxation and recovery. So the aim of the study is to compare the effectiveness of Muscle Energy Technique (MET) and Bowen Technique (BT) in reducing neck pain and disability in IT professionals with subacute trapezititis. 24 IT professionals (20-45Y age) with subacute trapezititis (7 days - <1month) were randomly assigned into two groups: Group A (n=12) received MET & Group B (n=12) received BT for 2 weeks for 5 sessions/week. Both Neck Pain Rating Scale (NPRS) and Neck Disability Index (NDI) were measured at baseline & after 2 weeks. Paired t-test results showed Group B (BT) had greater improvement. MET & BT are effective for neck pain and disability in IT professionals with trapezititis. BT may offer superior short-term outcomes in pain reduction and neck function. Clinically, BT can be recommended to the patients having subacute trapezititis to reduce pain and neck disability.

Index Terms - Muscle Energy Technique, Bowen Technique, IT professionals, Subacute Trapezitis, Neck Pain, NPRS, Neck Disability Index

I. INTRODUCTION

Among computer workers, work-related musculoskeletal disorders (WRMSDs) are prevalent and can cause pain and functional impairments in the hands, wrists, elbows, shoulders, and neck. Between 33.8% and 95.3% of people have WRMSDs, and the lower back, neck, upper back, and shoulders are the most commonly affected regions ^[1]. Neck pain is a very common ailment that is frequently associated with spasms of the trapezius muscle, resulting in severe pain, incapacity, and financial expenses ^[2]. In both emerging and developed nations worldwide, the prevalence of trapezititis is higher in both males and females ^[3].

Pain, stiffness, and tightness in the neck, shoulders, and upper back are symptoms of trapezititis, which is an inflammation or irritation of the trapezius muscle. Beginning along the midline, the trapezius muscle extends laterally to the acromion (over the shoulder) and from the occiput (base of the skull) into the lower thoracic area (to the mid back). The upper, middle, and lower fibres are the three sections that make up the trapezius muscle. The upper trapezius is a postural muscle that is particularly vulnerable to overuse ^[4]. The trapezius muscle rotates, retracts, elevates, and depresses the scapula ^[3].

The trapezius muscle is weakened by stress, poor posture, and repetitive strain, which frequently leads to muscle spasms that cause severe discomfort, incapacity, and financial loss. Numerous situations, including lengthy periods of idleness, repetitive jobs, prolonged cervical spine flexion, unpleasant posture, incorrect keyboard and mouse configuration, lack of chair armrests, and posture of the upper extremities [5].

Two osteopathic doctors, that developed the active muscle energy technique namely were Fred Mitchell Sr. and Fred Mitchell, Jr. It aids in soft tissue treatment, joint mobilisation, muscle stretching, pain relief, and circulation enhancement. In MET, a patient contracts their muscles in response to a therapist's counterforce, which is based on autogenic or reciprocal inhibition [6].

Thomas Ambrose Bowen created the gentle and calming Bowen Technique, a manipulation method that aims to reduce pain by stretching the delicate connective tissue, or fascia, or soft connective tissue. It focusses on the deep and superficial fascia to treat neurological and musculoskeletal conditions without employing force. In addition to being composed and caring, it does not use coercive manipulation. Applications of Bowen therapy include superficial and deep fascia. The portion of connective tissue that surrounds, divides, and affects each organ and tissue in the body is called fascia, or soft tissue [7].

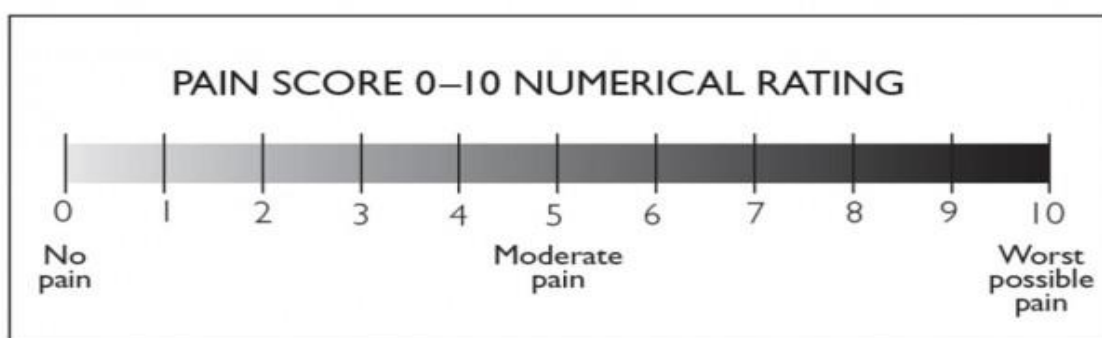
Intrafascial mechanoreceptor are stimulated by Bowen movement, which affect muscle tone and enhance vagal tone. Along with, Bowen's action hydrates fascia, improving the vascular and nerve supply. Stretch reflexes are movements made on the origin, insertion, or belly of muscles where receptors are found. The neurological system can determine if the musculotendinous tissue is long, tense, or stretched based on these motions [8].

The goal of the study is to evaluate and analyze the effect of Muscle Energy Technique and Bowen Technique on neck pain and disability in IT employees with subacute trapezititis.

To assess the outcomes, the study used two key measures: a questionnaire designed to evaluate neck pain has affects ability to manage in everyday life and recreation whereas, Numeric Pain Rating Scale (NPRS), which is used to measure the intensity of pain from 0-10.

A self-report questionnaire called the Neck Disability Index (NDI) gauges how disabled patients view themselves and how their neck pain affects their day-to-day activities. It has an ICC value of 0.50 and 0.98. 10 domains covered by the NDI are personal care, pain intensity, reading, lifting, Headaches, driving, working, concentration, and Recreation. Each question has six possible answers, with scores ranging from 0 (no disability) to 5 (full disability). The scores for each area are then added up. The scoring range is 0 to 50, where 0 is the greatest possible score and 50 is the lowest. Recording the score on a scale of 0 to 100 is an additional option. A percentage (0–100%) is frequently used to report the score [9] [10].

The Numeric Pain Rating Scale (NPRS) is an outcome measure that offers a unidimensional assessment of pain severity in adults, including those who have chronic pain. The NPRS uses a numerical segmentation of the visual analogue scale (VAS), where participants select a whole number (0–10 integers) that best captures their degree of discomfort. '0' denotes "no pain," while '10' denotes "pain as bad as you can imagine" or "worst pain imaginable." On an 11-point numeric scale, the ICC score is 0.54 [11].



[11]

II. MATERIALS AND METHODOLOGY

- STUDY DESIGN : Comparative experimental study
- STUDY SETTING : various OPD centers in Ahmedabad city
- STUDY POPULATION : IT professionals with subacute trapezititis
- SAMPLE TECHNIQUE : Convenient sampling
- SAMPLE SIZE : 24 subjects
- TREATMENT DURATION : 2 weeks
- OUTCOME MEASURES : Neck disability scale (NDI), Numerical pain rating scale (NPRS)

MATERIALS REQUIRED :

- Pillow

- Treatment Couch
- NDI questionnaire
- pen

III. SELECTION CRITERIA

INCLUSION CRITERIA

- Age : 20-45 years
- Gender : both male and female
- Patients involved in computer use for 5 hours or more on desk.
- Duration of pain less than 1 month
- NPRS score more than or equal to 5
- NDI questionnaire score 5-24 score that is mild to moderate disability
- Patient with unilateral trapezitis
- Patient willing to participate

EXCLUSION CRITERIA

- Fracture of cervical vertebrae
- Traumatic neck injury
- Cervical radiculopathy
- Diagnosed case of disc prolapse, spondylolisthesis
- Cervical instability
- Any deformity: spasmodic torticollis, sprengel's deformity
- Tumor over neck area
- Recent surgery in and around cervical and shoulder region during past 12 months.

IV. PROCEDURE

GROUP A: Muscle Energy Technique (MET)

- Frequency - 3 times each session,
- 3 sessions a week for alternate days.
- Total - 6 sessions over 2 weeks
- Duration - 7-10 seconds (of sustained contraction), 30 seconds (of stretch hold)
- Therapist will assess for the tender areas by palpation method.
- Therapist will take the patient in a comfortable position in which treatment will be given.
- Position of the subjects - lies supine, arm on the side to be treated lying along the side of the trunk, head/neck side bent away from the side being treated just short of the restriction barrier.
- In techniques, first the subjects stabilized the shoulder on the affected side with one hand, while the ear/ mastoid area of the affected side was held by the opposite hand.
- The head and neck were then bent towards the contralateral side, flexed and ipsilaterally rotated. The subjects then shrugged the stabilized shoulder towards the ear at a sub maximal pain free efforts.
- Contractions:
 - **Posterior Fibers:** Neck flexed, fully side-bent, and fully rotated to the opposite side.
 - **Middle Fibers:** Neck flexed, side-bent, and half rotated.
 - **Anterior Fibers:** Neck flexed, side-bent, and slightly rotated toward the treated side.
- The isometric contraction was maintained for 7 to 10 sec and 3 second relaxation period was given and repeated 3 to 5 times per treatment sessions.



figure 1: muscle energy technique

GROUP B: Bowen Technique (BT)

- Frequency – 1 time each session
- 3 sessions a week for alternate days.
- Total- 6 sessions over 2 weeks, Duration - 20-30 minutes.
- Position of the subjects: Prone lying or sitting with neck supported using the pillow over the couch.
- The subjects has to be positioned in a comfortable position.
- Place the therapist thumb on the affected side trapezius muscle.
- Hook the therapist thumb on the lateral edge of the trapezius muscle to form pressure against it.
- Create a slight pause, as the nervous system register a tension.
- As the therapist thumb begins to flatten in a medial direction, the trapezius muscle will pluck or plop or respond in some manner.
- Carry the skin and challenge the muscle first with the thumbs followed by the fingers.
- The hands are placed with an inch of space between the thumbs and fingers. So that the hands can play the muscles simultaneously.



figure 2: bowen technique

V. 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.

The present experimental study was conducted with the objective of evaluating and comparing the therapeutic efficacy of Muscle Energy Technique (MET) and Bowen Technique (BT) in the management of subacute trapezititis among information technology (IT) professionals, a population commonly predisposed to musculoskeletal disorders due to prolonged static postures and repetitive occupational strain. The study specifically aimed to assess the changes in pain intensity and functional disability of the cervical spine associated with mechanical neck pain.

A total sample size of 24 participants was recruited and randomly allocated into two equal groups, with each group receiving either MET or BT intervention over a duration of two consecutive weeks. To objectively

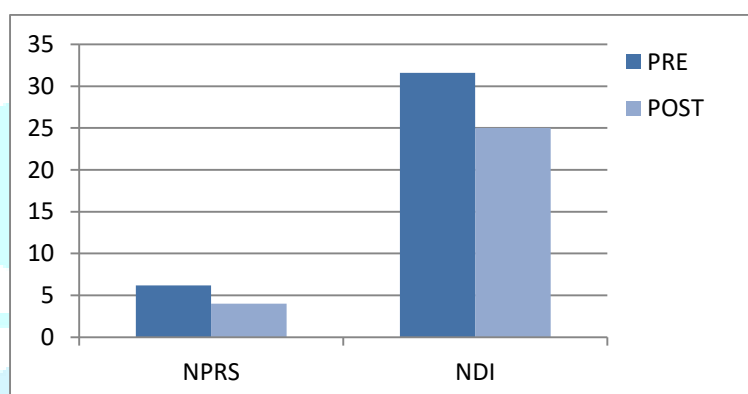
quantify the clinical outcomes, validated tools including the Numeric Pain Rating Scale (NPRS) and the Neck Disability Index (NDI) were employed. These outcome measures were recorded both prior to the commencement of treatment (pre-intervention) and immediately after the completion of the therapeutic protocol (post-intervention).

This pre- and post-comparative analysis allowed for a comprehensive understanding of the differential impacts of the two manual therapy techniques on alleviating neck pain and improving functional capabilities in individuals suffering from subacute trapezititis.

○ Muscle Energy Technique (MET) Group:

In the MET group, the mean NPRS score significantly decreased from 6.166 ± 1.937 at baseline to 4.00 ± 0.953 post-intervention. The paired t-test revealed a statistically significant improvement with a **t-value of 28.18** and **p < 0.0001**. Similarly, the NDI score reduced from 31.58 ± 1.781 to 23.66 ± 2.498 , showing a **t-value of 25.308** with a **p-value < 0.0001**, indicating a highly significant decrease in disability following the intervention.

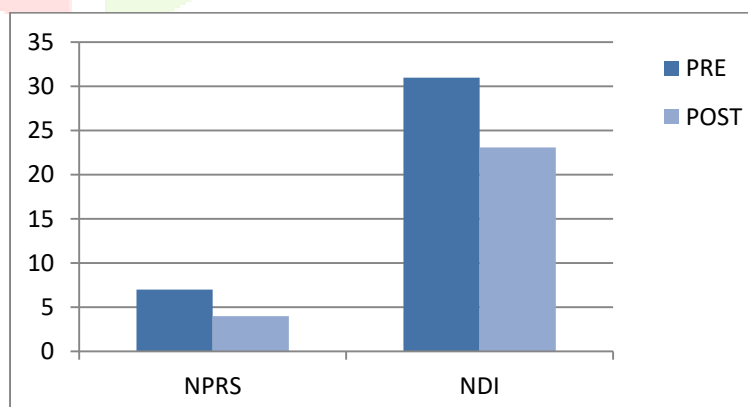
chat 1: pre and post NPRS & NDI scores of MET



○ Bowen Technique Group

In the Bowen Technique group, the pre-intervention NPRS mean score was 7.0 ± 1.128 , which reduced to 4.0 ± 2.274 post-intervention. The NDI score in this group also showed a substantial improvement, reducing from 31.0 ± 1.477 to 25.00 ± 2.274 , with a **t-value of 23.550** and **p < 0.0001**.

chat 2: pre and post NPRS & NDI scores of BT



VI. RESULT

While both intervention groups exhibited significant within-group changes in pain and disability scores, the Bowen Technique group showed a comparatively greater improvement in both NPRS and NDI scores. The larger mean differences and more significant p-values in the Bowen group suggest it may be more effective in managing neck pain and associated functional limitations than the MET group. Statistical analysis shows that Group B (BT) achieved greater improvement with mean values of NDI: 31 (pre) and 23 (post) NPRS: 7.0 (pre) and 4.0 (post), with an average of 8-point NDI improvement and a 3-point NPRS reduction.

table 1: NPRS (Numeric Pain Rating Scale) scores

Group	Pre-Intervention Mean $\pm$ SD	Post-Intervention Mean $\pm$ SD	Mean Improvement
Group A (MET)	6.166 $\pm$ 1.937	4.00 $\pm$ 0.953	2.166
Group B (BT)	7.0 $\pm$ 1.128	4.0 $\pm$ 2.274	3.0

table 2: NDI (Neck Disability Index) scores

Group	Pre-Intervention Mean $\pm$ SD	Post-Intervention Mean $\pm$ SD	Mean Improvement
Group A (MET)	31.58 $\pm$ 1.781	25.00 $\pm$ 2.498	6.58
Group B (BT)	31.0 $\pm$ 1.477	23.08 $\pm$ 2.274	8.0

VII. DISCUSSION

The present study was undertaken with the intension to see the effect of MET and Bowen technique on pain (NPRS) and Neck Disability (NDI) in young adults (20-45 years) with subacute unilateral trapezitis and to compare weather MET or Bowen technique is more effective in reducing pain and neck disability. Intervention was done for 2 weeks – (6 sessions over 2 weeks) to see which technique is more effective in decreasing pain and neck disability in terms of NPRS and NDI scores. For the study 24 subjects were divided into 2 groups of 12 each. The study comprised of subjects between 20-45 years in both groups.

Group A received MET and group B Bowen technique. Study was done and data was collected pre and post treatment. Pain was rated using NPRS score and neck disability using NDI score. The group A received treatment using MET approach. Another name for the manual therapy method known as the "muscle energy technique" is "active muscular relaxation." A regulated, voluntary isometric contraction of shortened muscles is used to increase range of motion, strengthen the muscle, and facilitate lymphatic drainage of fluid [7].

A common technique for Bowen Moves is to use two fingers and move away from the patient's torso. An energy action and a physical action are both present. The body is encouraged to cure itself through the use of tiny inputs, or "moves," often in profound ways. Multiple sets of exercises are included in a Bowen technique session, which usually lasts 15 to 45 minutes. Bowen motions are focused but soft [13].

The study from statistical analysis supports the alternate hypothesis which states that Bowen technique is more effective than MET on pain and neck disability in IT Proffesionals with subacute unilateral trapezitis.

Nitsure P, Kothari N. conducted a study to show the effectiveness of Bowen technique as an adjunct to conventional physiotherapy on pain and functional outcomes in subjects with acute trapezitis, concluded that Bowen technique is effective in reducing pain, improving ROM and reducing neck disability in patients with acute trapezitis [13].

The result of the study are also in accordance with Michelle Marr el al in 2010 who studied the effect of the Bowen technique on hamstring flexibility over time revealed immediate significant increase in the flexibility of the hamstring muscles both within subjects and between subjects differences for the Bowen group. There was significant increase in the flexibility level observed over one week [14].

Vijay kage et al., (2017) – “The effectiveness of Bowen technique in improving the cervicaljoint ROM and reduction of neck disabilities in dentist with chronic trapezitis. Bowen technique is effective in the reduction of the muscle spasm, pain, functional outcomes and cervical range of motion in dentist. The Bowen technique seems to be more effective in reduction of the neck disabilities and improving the cervical range of motion in dentist withchronic trapezitis.

Jhaveri A, Gahlot P. conducted a study comparing the effectiveness of Myofascial release technique versus MET on chronic trapezitis ,concluded that MET found to be significantly more added effect that Myofascial release technique in improving pain, cervical disability and cervical movements[15].

Bowen therapy uses a holistic technique to stretch the soft connective tissue in the body. This gentle stretching can promote pain relief in the muscles and alleviate related neurological conditions. Muscle

energy technique (MET) is a manual therapy technique and is also called as active muscular relaxation technique in which controlled, voluntary, isometric contractions of the target muscle groups are used. It reduces pain by central and peripheral modular mechanisms, such as activation of muscle and joint mechanoreceptors that involve centrally mediated pathways like the periaqueductal grey (PAG) in the midbrain, or non -opioid serotonergic and noradrenergic descending inhibitory pathways^[12].

From above discussion, this study which is compared effect of muscle energy technique and bowen technique on neck disability and pain in it professionals with subacute trapezititis on 6 sessions over 2 weeks of intervention. Both the technique can be used to reduce the pain and improve the functional activities. When compare to GROUP B (Bowen Technique) shows more significant than the GROUP A (Muscle Energy Technique).

VIII. CONCLUSION

This study conclude that after 2 weeks duration of treatment to reduce the neck pain (NPRS) and improve the functional activities (NDI) in Muscle Energy Technique (GROUP A) and Bowen Technique (GROUP B) among IT professionals with subacute trapezititis. But the Bowen technique has shown more improvement than the Muscle energy technique. So, this has rejected null hypothesis.

IX. LIMITATIONS AND RECOMMENDATIONS

LIMITATIONS

- Subjects could not be followed up after the study duration.
- The sample size was limited in and around Ahmedabad city

RECOMMENDATIONS

- Effect of Muscle energy technique and Bowen technique can be compared with other techniques like ultrasound, MFR, stretching.
- Future research can be done with long term follow up to know the consistency of the effects.
- Other outcome measures can be used for future studies like neck ROM, craniovertebral angle.

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