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Research Article

"EFFECTIVENESS OF MUSCLE ENERGY TECHNIQUE VERSUS MYOFASCIAL RELEASE TECHNIQUE AMONG PATIENTS WITH UPPER TRAPEZITIS"- A COMPARATIVE STUDY

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ABSTRACT

Introduction and background: Trapezius pain is the classic stress pain and it is the most common musculoskeletal disorder. The upper trapezius muscle is designated as postural muscle and it is highly susceptible to overuse. Physiotherapy techniques like myofascial release technique and Positional release therapy, Muscle energy technique has been proposed as an adjunct to conventional therapy to treat trapezitis.

Methodology: Study design was Pre and post test experimental study. The Population included subjects of 20 to 35 years of age with upper trapezitis. The Sampling technique used is purposive sampling. The Study duration was 06 months. The Sample size was 30. The Study setting was M.C.G. Civil hospital and Sparsh physiotherapy clinic, Navasari. Subjects were preliminary screened based on the inclusion and exclusion criteria. They were allocated in to two groups using Quasi randomization with 15 subjects in each group. The Group A subjects were subjected to muscle energy technique over upper trapezius muscle. The Group B subjects were subjected to myofascial release technique over upper trapezius muscle. Both the groups received conventional therapy. Pre and post test scoring of VAS and NDI was conducted for the Group A and Group B after 4 weeks.

Data Analysis: Analysis was done using SPSS Software version 18. Descriptive analysis was used to calculate mean and standard deviation. Paired t test was used for inter group analysis. Independent t test was used for intra group analysis for all the dependent variables. The level of significance was set at 95%. **RESULT AND CONCLUSION-** MET is more effective in reducing pain and improving function in upper trapezitis patients.

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INTRODUCTION

Neck pain had become a common complaint in the all inclusive community with an expected lifetime commonness of 67% among adults aged from 20–69 years and an expected cost of 1% of total health consumptions. Neck agony is a typical musculoskeletal problem in the overall public. Although most likely not as regular and handicapping as low back pain, neck pain still constitutes a noteworthy burden on patients as far as pain, disability and absence from work¹.

The upper trapezius muscle are designated as postural muscle and it is highly susceptible to overuse. Trapezius muscles help with the function of neck rotation, lateral flexion and extension.⁵ Because the trapezius muscle works to move the neck in several directions, its degree of tightness or looseness

affects neck flexibility. Any position which places trapezius in a shortened state for a period of time without rest may shorten the fibers and lead to dysfunction and restricted movements of neck. For people who work at desks and computers, or who spend many hours driving, the upper trapezius becomes very sore and painful.¹

Trapezitis is an inflammatory pain arising from the trapezius muscle causing a severe neck spasm. This muscle lies at the back of the neck and helps in shrugging movement of the shoulder along with upward movement of the head. Unlike Torticollis, the pain and stiffness due to trapezitis, is episodic and lasts for 3-5 days at a time. Physical therapy has proven effective in trapezitis pain⁶. There are various treatment modalities like Ultrasound, LASER, TENS, and IFT available. Treatment of trapezitis requires a multifaceted approach. In the

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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 rate¹ Combination of manual therapy like positional release therapy and myofascial release therapy that includes exercises appears to be effective for trapezitis and spasm. Myofascial release techniques are used to improve movement potentials, reduce restriction, release spasm, and ease pain^{8,9}.

There are evidences proving that Muscle Energy Technique over upper trapezius muscle is effective in relieving myofascial pain and improving Range Of Motion of neck in patients with myofascial pain syndrome over upper trapezius muscle and there are evidences proving that Myofascial release technique is also effective. This study may prove that whether Muscle Energy Technique or Myofascial release technique is more effective in relieving pain and improving functional ability of neck in patients with myofascial pain syndrome over upper trapezius muscle. Null hypothesis states that There is no significant difference between Muscle Energy Technique and Myofascial Release in reducing pain and improving the functional range of neck among upper Trapezitis patients.

METHODOLOGY

Study design is Pre and post test experimental study. The Population includes subjects of 20 to 35 years of age. The Sampling technique was purposive sampling the Study duration: 06 months and Sample size was 30. Study setting was M G G civil hospital and Sparsh physiotherapy clinic, Navasari. Inclusion criteria consisted of Both Male and Female of Age group between 20-35 years, Clinically diagnosed upper trapezitis patients with VAS score of 6-9., Both left and right side trapezitis, Cervical instability and any other degenerative disorder, Neck pain of any other origin, Recent surgery in and around shoulder and cervical region., Cervical radiculopathy and Thoracic outlet syndrome were excluded.

Procedure- Ethical clearance was taken from institutional ethical committee. The confidentiality of the patients were maintained. Subjects was preliminary screened based on the inclusion and exclusion criteria. They were allocated in to two groups using Quasi randomization with 15 subjects in each group.

Prior to the treatment, pre test scoring was conducted for the Group A and Group B to check the pain intensity and neck function evaluation using VAS score and neck disability index. The Group A subjects were subjected to muscle energy technique over upper trapezius muscle. The Group B subjects were subjected to Myofascial release technique over upper trapezius muscle. Both the groups received conventional therapy which included hot pack and cervical isometrics, Post test scoring was conducted for the Group A and Group B after 4 weeks to check the pain intensity and neck function evaluation using VAS score and neck disability index after the intervention.

Group: A Muscle Energy Technique + Conventional Therapy

The patient is positioned in supine lying with head flexed, rotated towards opposite side and laterally flexed away from the stretch. The therapist stabilizes the patient's head with one hand while the other hand is placed on the patients shoulder.

Patient is instructed to elevate the shoulder towards the ear, at the same time therapist give equal and opposite resistance and hold it for 10 seconds. Then ask the patient to relax. The therapist then moves to the new resistance barrier. This procedure will be repeated for 5 times

Group: B Myofascial Release Technique + Conventional Therapy

The patient should be seated erect on chair with arms hang freely. Then mark the tender area with nontoxic marker pen. The practitioner should stand to the side and behind the patient, close to the muscle to be treated. The forearm or lateral aspect of the palm glides slowly medially towards the base of the neck or scapula, while maintaining a firm pressure. As glide is given the patient should equally side bending and turning the head away from the side being treated while maintain erect sitting posture. Myofascial release has to be given for 5 minutes included 3 palmar glide^{12,13}.

Total duration of the intervention was of 4 weeks and intervention was conducted for four days in week and single treatment session lasted for 10-15 minutes. Outcome measures used were VAS and NDI for measuring pain and neck disability. Visual analogue scale with a 10 score rating to measure an intensity of pain^{10,11}. The Neck disability index (NDI) is designed to measure neck specific disability. The questionnaire has 10 items concerning pain and activities of daily living including personal care, lifting, reading, headaches, concentration, work status, driving, sleeping and recreation. reference

Statistical Analysis

Analysis was done using SPSS Software version 18. Descriptive analysis was used to calculate mean and standard deviation. Paired t test was used for inter group analysis. Independent t test was used for intra group analysis for all the dependent variables. The level of significance was set at 95%. Result-When the comparison was made on the VAS and NDI scales on day 1, and last day of 4th week, they showed significant improvement in pain and disability in both the groups. But there is more significant improvement in MET group in both the outcome measures. The results are tabulated below-

Table 1 Details of pre and post comparison of VAS and NDI score for group A

Variables	Group	Mean Pre Value	Mean Post Value	Mean Diff	P Value	95%Confidence Interval of the Difference
Vas score	Group A	6.67	3.46	0.67	P<0.005	.78605
NDI score	Group A	18.13	11.86	6.27	P<0.005	.65834

Table 2 Details of pre and post comparison of VAS and NDI score for group B

Variables	Group	Mean Pre value	Mean Post Value	Mean Diff	P Value	95%Confidence Interval of the Difference
Vas Score	Group B	10.67	4.13	6.54	P<0.005	.86672
NDI Score	Group B	26.33	15.46	10.87	P<0.005	.78871

Table 3 Statistical Analysis of Standard Deviation Between Groups

SD	Group A	Group B
VAS SCORE	0.4898	0.44219
NDI SCORE	4.1095	3.9327

Table 4 Statistical Analysis of Vas and Ndi Score Between Groups

Score	Group	Mean value	Mean difference	P Value	95% Confidence Interval of the Difference
VAS SCORE	GROUP A	3.46	0.67	P< 0.005	.75640
	GROUP B	4.13		P< 0.005	.73290
NDI SCORE	GROUP A	11.86	3.60	P< 0.005	.60812
	GROUP B	15.46		P<0.005	.65559

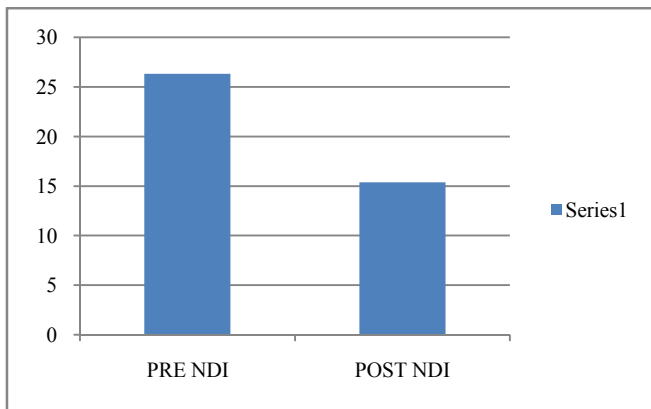


Fig 1 shows pre and post NDI mean values of group A

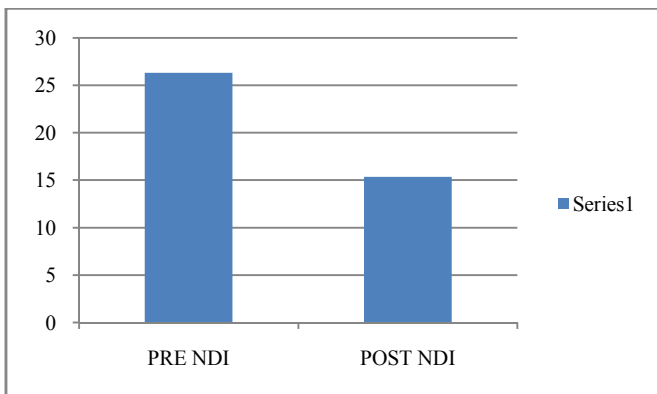


Fig 2 shows pre and post NDI mean values of group B

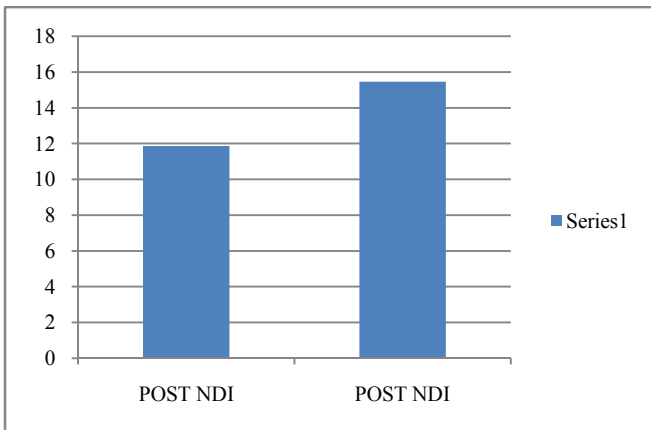


Fig 3 shows pre and post VAS mean scores of group A

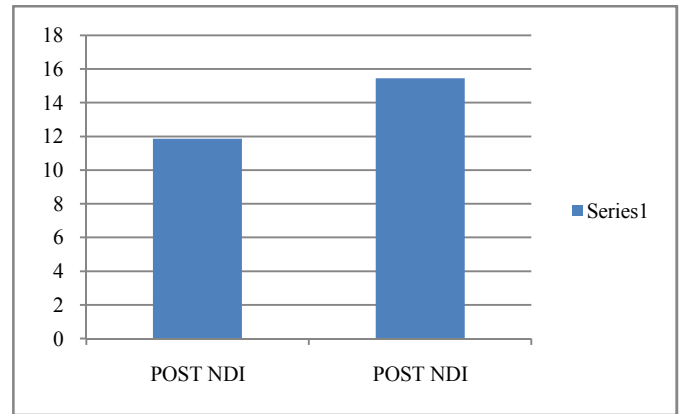


Fig 4 shows pre and post VAS mean scores of group B

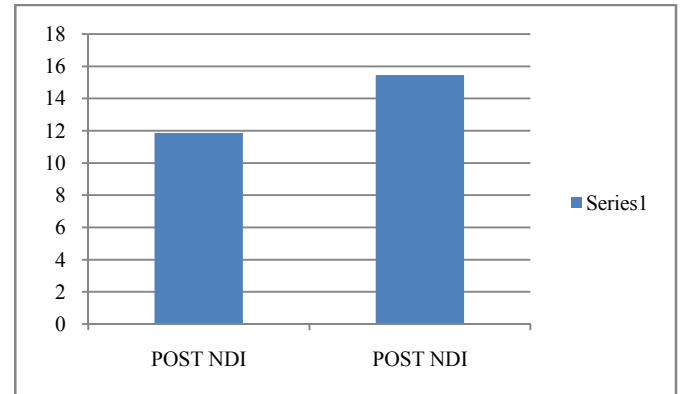


Fig 5 shows comparison of post vas mean scores of group A and group B

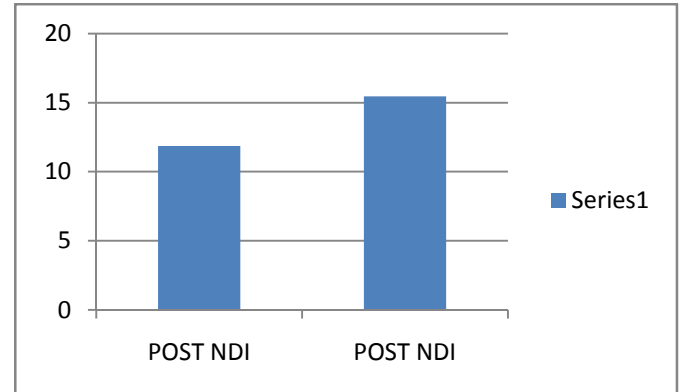


Fig 6 shows comparison of post NDI mean scores of group A and group B

DISCUSSION

The upper trapezius plays an important role in the mobility and stability of neck. The symptoms seen in people with latent MTrp could be explain by the energy crisis theory (simons *et al.*, 1999). According to this theory, a sustain contractile activity of sarcomeres increases the metabolic demands and squeezes the rich capillaries networks that supply the nutritional and oxygen needs of the region and decreased blood flow in the muscle at the site of latent trigger point (zhang *et al.*,2008). The combination of increase metabolic demand and impaired metabolic supply produces a local energy crisis. The local hypoxia and tissue energy crisis stimulates production of vaso reactive substances which will sensitize local nociceptors causing pain. In the presence of latent MTrp muscle could undergo early fatigue (Hagberg and Kvarnstrom.,1984) and out excessive stress on other stabilizing structures. Graff-Radford, suggested that the pathogenesis of myofascial pain likely has a

central mechanism with peripheral clinical manifestation. Therefore myofascial pain should involved enhancing the central inhibition.

The possible mechanism for the reduction in pain in the MET group can be attributed to the hypoalgesic effects which can be explain by the inhibitory golgi tendon reflex, activated during the isometric contraction that leads to reflex relaxation of the muscle. Activation of the muscle and joint mechanoreceptors leads to sympatho- excitation evoked by somatic efferent and localized activation of pre -aqueductal gray matter that plays a role in descending modulation of pain. The effect of MET for increase in range of motion can be explained on the basis of physiological mechanism behind the changes in muscle extensibility- reflex relaxation, visco-elastic change and changes to stretch changes. Combination of contraction and stretch (as used in METS) might be more effective for producing viscoelastic change than passive stretching alone, because the greater forces could produce increased viscoelastic change and passive stretching.

Muscle energy technique, i.e., post isometric relaxation are commonly recommended in the management of MTrps(Lewit,1999). Lewit and simons (1984) found an immediate relief of pain and tenderness after treatment with post isometric relaxation in patient with musculoskeletal dysfunction. Goldenberg (1993) found decrease pain intensity in tender points in patients suffering from fibromyalgia following the application of MET. Schenk *et al*, has proved in his study the effect of MET on Cervical ROM.

Conclusion- Muscle energy technique has been proven more effective than myofascial release technique in reducing pain and improving function in upper trapezitis patients in non specific neck pain.

Limitation--only certain age group (20 -35) years patient were included in study. Only referred patient of upper trapezitis were included. The study was conducted for short duration of time (4weeks). No follow up for pain and functional evaluation was done after 4 weeks.

Future scope

- only immediate effect on pain and functional outcome of neck was measured so further study would be done on long term effect of muscle energy technique and myofascial release on upper trapizitis patient.
- only pain and functions, was evaluated, so further study could be done on effect of muscle energy technique and myofascial release on changes in cervical range of motion.

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