

Effects of Muscle Energy Technique with and without Bowen Therapy in Text Neck Syndrome

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ABSTRACT

Aim: To determine the effects of Muscle energy technique with and without Bowen therapy on pain, function, range of movement, and posture in Text neck syndrome.

Methods: A randomized clinical trial was conducted in Fatima Hospital Sargodha. A total of 22 patients with text neck syndrome were included and randomly allocated to two groups. Assessment of pain, function, Cervical ROM, Craniovertebral angle, and Rounded shoulder angle was taken using a Numeric pain rating scale (NPRS), Neck disability index (NDI), Goniometer, and photogrammetry. Group A received treatment with hot packs and METs. Group B received a hot pack, Muscle energy technique (METs) and Bowen therapy. A total of 18 sessions were given in 6 weeks with 3 sessions per week. Both groups were reassessed after 3 weeks and 6 weeks of treatment with follow-up after 3 weeks of treatment completion. Data were analyzed by using SPSS 21.

Results: Findings revealed that a statistically significant difference ($p < 0.05$) was observed for both within a group and between-group analysis in NPRS, NDI, cervical range of motion (CROM), Craniovertebral angle (CVA), and Rounded shoulder angle (RSA). However, the Bowen group showed more improvement in terms of all outcome measures based on their mean differences.

Conclusion: The combination of METs and Bowen therapy was more effective in decreasing pain, improving movement, regaining functional status, and correcting posture in individuals with Text neck syndrome rather than using METs alone.

Keywords: Text neck, Muscle energy technique, Bowen technique, Pain, Range of motion

INTRODUCTION

The term 'Text Neck' is given by Dr. Dean L. Fishman. It is a kind of overuse syndrome or repetitive stress injury that refers to the painful symptoms on the neck and surrounding regions during or after prolonged forward bent posture which smartphone or tablet users typically make during text messaging¹.

While focusing on the screens of smartphones, unnecessary forces on the spine increase with the increase in the angle of neck flexion which is destructive in nature². Symptoms of text neck include stiff neck, sharp radiating pain, general soreness, weakness, numbness, and headache³. Clinical assessment of such individuals showed that the right side was particularly involved when linked to the other side or bilateral occurrence⁴. Female students were more prone to have text neck syndrome than male students.⁽⁵⁾ This illness is becoming one of the major health problems and the forward head is among the frequently identified poor postures that are associated with long-lasting musculoskeletal pain and low level of awareness⁶.

The muscle energy technique is a kind of manual treatment that uses inherent energy to relax and stretch stiff muscles. It has been widely used for curing the nervous and musculoskeletal systems⁷. It aimed to mobilize the joints by lengthening tightened muscles or by strengthening weakened muscles with isometric or isotonic contractions⁸. Bowen Technique is a therapeutic approach that is characterized by gentle rolling movements performed on soft tissues, at specific points. It is successful in relieving various musculoskeletal issues in the backs, necks, and limbs⁹. Precise and delicate Bowen moves are applied as a soft tissue remedial therapy over the musculoskeletal structures by using fingers and thumbs¹⁰.

Findings of a previous study suggest that post isometric relaxation is more beneficial in dealing with pain, disability, and cervical ROM as compared to isometric exercises in treating persons with non-specific neck pain¹¹. One of the studies showed that ischemic compression, myofascial release, and Bowen

therapy all were effective in reducing pain, increasing CROM, and improving functional status on nonspecific neck pain. However, Bowen Technique caused more improvement when compared to that other techniques¹².

This study was undertaken to explore the effects of METs and Bowen therapy on pain, function, ROM, and posture in patients having Text neck syndrome.

MATERIALS AND METHODS

A randomized clinical trial was conducted after the approval by the Research Ethical Committee of Riphah College of Rehabilitation and Allied Health Sciences (REC/RCS/20/1066). The study was conducted in Fatima Hospital Sargodha, Pakistan, from June 2020 to September 2020 and registered in the Iranian registry of clinical trials (IRCT20200513047421N1).

Young adults (male and females, 18-35 years of age), using smartphones >2 hours a day, having neck pain which is increased by sustained posture and feeling of stiffness on turning the head and neck after long usages, with CVA < 50° and RSA > 52°, NPRS ≥ 5 and NDI ≥ 10, and willing to participate were included. Patients with any spinal infection or inflammatory disorder, neck surgery, trauma, torticollis, scoliosis, malignancy, pregnancy, diagnosed cases of disc prolapse, stenosis, herniation, spondylolisthesis, osteoporosis, and those with current use of any medication or physical therapy treatment were excluded.

A total of 22 subjects (14 females, 8 males) with Text neck syndrome were included in the study after taking their consent. A convenient sampling technique was used to recruit the individuals and randomization was done by the sealed envelope method to divide the individuals into two groups. To conceal randomization sequentially numbered sealed opaque envelopes were prepared in advance and opened in sequence.

Sample size calculation was performed by using the G* Power version 3.1.9.4 software. An effect size d of 1.687 was set up for pain variations as per the previous study with the same research design¹³. After the addition of a 10% attrition rate, a

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sample size of 22 was calculated by keeping 80% of power and 0.05 of the significance level.

The pain was assessed using NPRS which is considered a valid and reliable method¹⁴. NDI scores were used to assess the functional status of patients with neck pain¹⁵. Active CROMs were measured in all directions in a sitting position with a universal goniometer.¹⁶ Postural assessment was carried out using the photo-graphic method. CVA and RSA were measured to identify FHP by using ImageJ software¹⁷ after taking the picture in a standing position (right side) with a digital video camera (Sony 16.1 M pixels) placed on a tripod 0.8 m away from the subject at C7 level. A prominent landmark was used to mark the location of the C7 spinous process and acromion tubercle.

Group A was treated with a hot pack applied over the neck and upper back area for 7-10 minutes and Mets were performed for the upper trapezius, levator scapulae, scalenus, and sternocleidomastoid muscles in the supine lying position. The post isometric relaxation method was used. The moderate isometric contraction was performed for 5 seconds followed by a relaxation period of 3 seconds.¹⁸ One set of 5 repetitions for each muscle was performed on alternate days. Group B participants received a similar protocol of hot pack and METs in addition to Bowen therapy, for which subjects assumed a prone lying position on a plinth. Intervention was given for 6 weeks on alternate days with each treatment session lasting for about 15-20 minutes¹⁹. Evaluation was done before, during (3rd week), and after treatment (6th week) with follow-up after 3weeks of treatment completion.

Statistical analysis was performed using SPSS for Windows version 21.0 software. The normality of data was assessed by using Shapiro-Wilk Test. A p-value of <0.05 was considered statistically significant and parametric tests of analysis were used. A general linear model repeated measures univariate analysis was

utilized, with a group (METs vs Bowen Therapy) and time (baseline, during treatment, post-treatment, and follow-up), as factors for analysis. Repeated Measure ANOVA was used to show the change in measurement over time and to measure the difference between two groups and within each group.

RESULTS

Twenty two subjects were included in the study. The result of this study indicates that using MET with Bowen Therapy is more effective than using METs alone in correcting text neck syndrome. A total of 7 (63.64%) females and 4 (36.36%) male participants were allocated to each group. The comparison of demographic variables of both groups indicated that the mean age of participants in the MET group was 26.27±4.541 and in Bowen, the therapy group was 25.82±4.729. Both groups were homogenous at baseline with no statistically significant difference in all the parameters including NDI, NPRS, CROMs, CVA and RSA with a p value> 0.05

After the analysis, it was found that within-group analysis showed a statistically significant (p< 0.001) improvement in all the outcome measures including NPRS, NDI, CVA, RSA, and CROMs over a period of 9 weeks in both the MET group and Bowen therapy group. (Table 1 and 2)

The between-groups analysis showed statistically significant differences in NPRS, NDI, CVA and RSA with p-values of 0.00, 0.039, 0.024 and 0.009, respectively. (Table 1) Significant differences were also present in cervical ROMs having p-values <0.05 (flexion=0.055, extension=0.054, right side-bending=0.013, left side-bending=0.003, right rotation=0.000, left rotation=0.000) at end of the treatment (Table 2).

Table 1: Within and between group comparison of NPRS, NDI, CVA and RSA among the groups.

Outcome Variables	Outcome variable	Pre-treatment (mean±S.D)	During Treatment (mean±S.D)	Post-treatment (mean±S.D)	Follow-up (mean±S.D)	P-value (within each group)	P-value (between two groups)
Numeric Pain Rating Scale	Group A	6.81±1.40	5.09±1.37	3.36±1.20	1.54±0.93	≤0.001	0.000
	Group B	7.00±1.00	4.27±1.19	1.63±1.02	1.09±0.70	≤0.001	
Neck Disability index	Group A	23.36±6.26	19.45±5.90	15.54±5.24	11.90±4.27	≤0.001	0.039
	Group B	22.18±4.23	19.45±5.90	10.72±1.42	7.81±1.77	≤0.001	
Craniovertebral Angle	Group A	43.54±4.27	47.41±4.76	49.76±4.26	50.56±7.25	≤0.001	0.024
	Group B	45.00±4.17	49.93±3.57	54.78±3.66	56.85±3.51	≤0.001	
Rounded Shoulder Angle	Group A	63.68±7.46	56.48±8.04	50.09±9.05	56.00±9.14	≤0.001	0.009
	Group B	61.57±5.44	50.19±5.29	43.16±5.22	42.85±5.59	≤0.001	

Table 2: Within and between group comparison of cervical flexion, extension, side-bending (right, left) and rotation (right, left) among the groups.

Outcome variable	Groups	Pre-treatment (mean ±S.D)	During Treatment (mean ±S.D)	Post-treatment (mean ±S.D)	Follow-up (mean ±S.D)	P-value (within each group)	P-value (between 2 groups)
Flexion	Group A	33.54±7.28	40.63±5.78	48.45±7.56	43.09±6.68	≤0.001	0.055
	Group B	31.18±8.44	38.09±8.12	50.36±9.03	44.90±10.26	≤0.001	
Extension	Group A	31.54±9.50	38.27±10.03	49.36±9.44	49.36±9.44	≤0.001	0.054
	Group B	27.45±6.07	39.18±5.81	49.45±5.87	45.27±5.25	≤0.001	
Right side bending	Group A	27.90±2.98	32.00±2.60	37.63±2.41	33.54±2.16	≤0.001	0.013
	Group B	25.36±7.67	32.54±6.90	40.81±5.36	35.45±5.83	≤0.001	
Left side bending	Group A	28.36±4.34	33.72±4.60	40.00±6.30	35.81±5.82	≤0.001	0.003
	Group B	23.72±3.10	31.63±3.32	43.18±3.09	37.45±2.50	≤0.001	
Right Cervical rotation	Group A	44.54±6.78	52.81±7.85	60.63±7.10	55.27±6.05	≤0.001	0.000
	Group B	37.27±5.79	48.27±4.71	63.09±3.17	56.27±3.97	≤0.001	
Left Cervical rotation	Group A	40.09±7.21	48.63±8.40	58.63±8.12	52.36±6.62	≤0.001	0.000
	Group B	33.81±7.78	46.36±6.91	61.81±5.13	56.81±5.36	≤0.001	

DISCUSSION

This study aimed to evaluate the effects of muscle energy technique with and without Bowen therapy to improve scores for NPRS, NDI, cervical ROM, and posture in patients having text neck syndrome.

Present study results for within-group analysis using repeated measure ANOVA indicated that subjects receiving treatment with METs showed a statistically significant reduction in pain, improvement in functional status, CROM, and posture with p-

value<0.05. This has also been proved in a previous study that the use of post isometric relaxation with and without the combination of stretching can reduce the pain, and NDI scores and improve ROM in teachers at secondary school having non-specific neck pain²⁰. Results of another study came into agreement with our findings which showed that the Bowen technique provides a significant reduction in pain and improvement in CROM and neck disability. It can be used as an effective adjunct to the conventional physiotherapy treatment in subjects with acute trapezititis for

restoring a proper resting tone of muscle with reduction of pain and tension cycles along with regaining more optimal function²¹.

People with small craniocervical angles have a greater FHP, and more disability. ⁽²²⁾ Subjects of both groups showed a significant increase in CVA with more improvement in the Bowen group. Forward shoulder angle increases with the severity of FHP, due to the increase of thoracic kyphosis. ⁽²³⁾ The value of RSA decreases with treatment in both groups with more reduction in the Bowen group. This indicates the positive effects of both interventions on posture.

The present study shows a statistically significant difference between two groups with a p-value <0.05 in terms of all outcome measures by using repeated measure ANOVA. There is more improvement in the Bowen therapy group as compared to that of another group in terms of pain, functional status, cervical ROM, and posture. This is in concurrence with the results of a previous study in which three alternate sessions of the Bowen technique and METs proved useful in improving flexibility, ROM, and strength of the hamstring muscle but the group treated with the Bowen technique indicated more improvement when measured¹⁹. This proves the combination of METs and Bowen therapy to be more useful for treating individuals with text neck syndrome.

CONCLUSION

The study concluded that a combination of METs and Bowen therapy is more useful in reducing pain and functional disability, improving range of motion and developing better posture in individuals with Text neck syndrome rather than using METs alone.

Limitations & Recommendations:

The effects of both interventions were not categorized according to the chronicity of the condition. Moreover, the markers were placed manually on the C7 spinous process and acromial tuberosity for the measurement of angles and reliability of their placement was not tested. It is recommended that more RCTs should be conducted in the future to prove the effects of Bowen therapy as an independent technique, including in various study settings.

Conflict of interest: The study has no conflict of interest declared by any author.

REFERENCES

1. Thiagarajan S, Telegbal SV. Text Neck: Is it a New Term for Physiotherapist? *Indian Journal of Medical & Health Sciences*. 2015;2(2):119-21.
2. Vate-U-Lan P. Text Neck Epidemic: a Growing Problem for Smart Phone Users in Thailand. *International Journal of the Computer, the Internet and Management*. 2015;23(3):27-32.
3. Sunil Neupane UTIAMA. Text Neck Syndrome - Systematic Review. *Imperial Journal of Interdisciplinary Research*. 2017;3(7):141-8.
4. Sharan D, Mohandoss M, Ranganathan R, Jose J. Musculoskeletal disorders of the upper extremities due to extensive usage of hand held devices. *Annals of Occupational and Environmental Medicine*. 2014;26(1):1-4.
5. Chaudary AA, Aslam F, Ali A, Asghar AR, Bashir H, Awais A, et al. Frequency of Text Neck Syndrome in Medical Students due to Excessive Usage of Electronic Devices. 2019(January):79-8
6. Shah PP, Sheth MS. Correlation of smartphone use addiction with text neck syndrome and SMS thumb in physiotherapy students. *International Journal Of Community Medicine And Public Health*. 2018;5(6):2512.
7. Park J-H, Lee Y-J, Ryu H-M, Lee S-J, Park E-J, Song C-H, et al. Effects of Muscle Energy Technique of Upper Trapezius and Sternocleidomastoid Muscles on Bell's Palsy. *Journal of Acupuncture Research*. 2017;34(4):190-6.
8. Praze UKV. Efficacy of post-isometric relaxation technique on muscle tissue and its viscoelastic properties after physical activity. 2012.
9. Pennington K. Bowen Therapy: A review of the profession. *Journal of the Australian Traditional-Medicine Society*. 2012;18(4):217-20.
10. Marr M, Baker J, Lambon N, Perry J. The effects of the Bowen technique on hamstring flexibility over time: A randomised controlled trial. *Journal of Bodywork and Movement Therapies*. 2011;15(3):281-90.
11. Contractor ES, Agnihotri DS, Patel RM. Effect of Spencer Muscle Energy Technique on pain and functional disability in cases of adhesive capsulitis of shoulder joint. 2016;3(8):126-31.
12. Dalal P, Kage V. Comparison of Ischaemic Compression, Myofascial Release and BOWENS Technique In Non Specific Neck Pain - A Randomized Clinical Trial. *Indian Journal of Applied Research*. 2020;10(1):25-8.
13. Carter B. A pilot study to evaluate the effectiveness of Bowen technique in the management of clients with frozen shoulder. *Complementary Therapies in Medicine*. 2001;9(4):208-15.
14. Irwin JA. The Effect of Costovertebral Adjustment Versus Ischaemic Compression of Rhomboid Muscles for Interscapular Pain. 2012.
15. Narayan A, Vinay J. Efficacy of Muscle Energy Technique on Functional Ability of Shoulder in Adhesive Capsulitis. *Journal of Exercise Science and Physiotherapy*. 2014;10(2):72-.
16. Norkin CC, White DJ. *Measurement of Joint Motion*, 5th Edition. FA Davis Company. 2017.
17. Guan X, Fan G, Wu X, Zeng Y, Su H, Gu G, et al. Photographic measurement of head and cervical posture when viewing mobile phone: a pilot study. *European Spine Journal*. 2015;24(12):2892-8.
18. El Laithy MH, Fouda KZ. Effect of post isometric relaxation technique in the treatment of mechanical neck pain. *Physical Therapy and Rehabilitation*. 2018;5(1):19-.
19. Kage V, Bootwala F, Kudchadkar G. Effect of Bowen Technique versus Muscle Energy Technique on Asymptomatic Subjects with Hamstring Tightness: A Randomized Clinical Trial. *International Journal of Medical Research & Health Sciences*. 2017;6(4):102-8.
20. Sharmila B. Isometric Muscle Energy Technique and Non-Specific Neck Pain in Secondary School Teachers - Results of an Experimental Study. *Indian Journal of Physiotherapy and Occupational Therapy - An International Journal*. 2014;8(2):58-.
21. Nitsure P, Kothari N. 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*. 2015;21(36):5-11.
22. Yip CHT, Chiu TTW, Poon ATK. The relationship between head posture and severity and disability of patients with neck pain. *Manual Therapy*. 2008;13(2):148-54.
23. Lee H-s, Chung H-k, Park S-w. The Analysis of severity of forward head posture with observation and photographic method. *Journal of the Korean Society of Physical Medicine*. 2015;10(3):9-17