Original Article

A Comparative Study Between Kalternborn Grade Iii Mobilization And Muscle Energy Technique To Increase Range And Functional Ability Among Patients With Mechanical Neck Pain

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Abstract

Background and Purpose: To compare the study between Kalternborn grade III mobilization and Muscle Energy Technique to increase range and functional ability in patients with mechanical neck pain.
Design: Comparative study design.
Methods: It is a pre and post- test Quasi experimental study, 30 patients between the age group of 18 to 40 years who comes under the inclusion criteria were selected Randomly and divided into 2 groups of 15 patients in each. First Group treated with Kalternborn grade III mobilization and second group with Muscle Energy Technique (METS). The period of study was 5 weeks. Pain and neck function were assessed before and after the treatment by Visual Analogue Scale and Neck Disability Index respectively. The collected data were valuated statistically. The study was calculated by Paired and Unpaired 't' test.
Conclusion: The study shows that the pain has been reduced & Neck function also improved among the patients who were treated with Kalternborn grade III mobilization to patients treated with Muscle Energy Technique (MET) for Mechanical Neck Pain. It is concluded that Muscle Energy Technique (MET) group shows statistical improvement in neck function.

Keywords: Sub-occipital muscle release, Kalternborn grade III mobilization, Muscle Energy Technique, Neck pain**.**

INTRODUCTION:

Neck pain is more common in people who spend most of their day working at a desk, in front of the computer with a "bend forward" posture (or) "forward head carriage" posture. Non - specific neck pain most often caused by continuous forward head carrying posture leading to sub - occipital muscle tightness, decreased cervical mobility and obliterated cervical spine curvature[1]. The movement of C1 and C2 is coupled to a vertical translation of the same two vertebrae. The head is supported by the lower neck and upper neck, and these areas commonly cause neck pain[2]. If the supportive system is affected then the muscle in these areas become very tight and causes neck pain. It is a common problem in general people. In this 60% of the population is suffering from this condition. Pain also increases due to tightness of the muscle both in the neck and back and pinching the nerves which originates from the spine[3]. This kind of pain is known as Mechanical neck pain. It may be due to minor sprains and strains of the muscles and ligaments. In cervical spine, flexion and extension occur at the atlanto-axial region and atlanto- occipital region. The atlanto-occipital region has greater movement range than atlanto-axial region. The shape of bony articulation and alar ligament provide rotation and prevents

excessive rotation. The inferior articular process of the altas and superior articular surface of the axis are flat to convex[4]. The Movement of C1 and C2 is coupled with vertical movement of the same vertebrae. C4, C5, C6 are very mobile and causes neck pain[5]. Improper posture and overuse causes pain and the muscles become tight so the range has been reduced.

METHODS:

This study was conducted at JKKM College of Physiotherapy & JKKM institution under the supervision of the concerned authority. A sample of 30 patients within the age group of 18-40 years with mechanical neck pain were randomly divided into two groups. A total number of 30 subjects were selected by Quasi Experimental study after due consideration to inclusion criteria. They were divided into two groups. Group A and Group B with 15 subjects in each group. Group A received Kalternborn grade III mobilization. Group B received Muscle energy technique (METS) 5 sessions for 4-5 weeks. The parameter used for this study was VAS and NDI Scale. Both males and females were included in this study. Any degenerative change around in neck, congenital short neck, ankylosing spondylitis, surgery around the neck are excluded from the study [6,7,8].

PROCEDURE:

Group –A (Kalternborn grade III mobilization): The mobilization was applied at the hyper mobile joints during the treatment period. The position of the patient is prone. Therapist should stand behind the head of the patient in walk standing position. Therapist should place both hands on patients' neck. Posterior and anterior glides were applied ten times with five seconds hold on spinous process of the apophyseal hypo mobile joints[9].
Group-B (Muscle Energy Technique): Muscle Energy Technique were applied in each session. Patient is in supine lying. Therapist should stand behind the patient and the pressure is applied and moved up to its restricted barrier, the ask the patient to contract isometrically for five seconds with a rest period of fifteen seconds. The technique is given three to five times in a session[10,11].

RESULTS:

The comparative mean value, mean difference, standard deviation, and unpaired 't' value between pre and post-test value of NDI in group A and group B.

Table-1: Neck Disability Index

Neck Disability Index	Mean	Mean difference	Standard deviation	Unpaired 't' value
Group A	5.07	5.0	1.621	4.69
Group B	10.07		3.79	

The mean value of two groups, the value of mean for group A is 5.07 and for B is 10.07 which is higher than A and the value of unpaired 't' test was 4.69 at the level of significance at 0.05% which is higher than the tabulated 't' value (2.13). The mean value showed statistical difference between of two groups that is Group A and B. The comparative mean value, mean difference, standard deviation and unpaired 't' value between pre and post-test value of VAS in group A and group B.

Table-2: Visual Analogue Scale

Visual Analogue Scale	Mean	Mean difference	Standard deviation	Unpaired 't' value
Group A	2.20	1.67	0.68	6.013
Group B	3.87		0.83	

Shows the mean value of two groups, the mean value of Group B was 3.87 which was greater than Group A value 2.20 and the unpaired 't' test was 6.013 at 0.05 % significant level, which was greater than the tabulated 't' value (2.13). It showed the statistical difference between Group A and Group B.

DISCUSSION:

Mechanical neck pain is common among desktop workers because of their incorrect head position while working on computers, which places continuous extension of the upper cervical structure causing tightness of the muscles in that area. Studies of Jordan Miller et.al, shows that manipulation, mobilization and soft tissue technique decreases pain and improves function in neck pain patients[12].

Neck disability index and Visual Analogue Scale were taken as parameter. The data of Pre test were taken and tabulated for Group A and Group B patients. Group A patients were administered with kalternborn grade III mobilization and Group B patients were subjected to muscle energy technique for a period of 4-5 weeks. The results of the were analysed and recorded for comparison after 4-5 weeks of treatment.

The paired 't' test was used to compare the pre Vs post test values of Group A and Group B separately and the unpaired t test values was used to compare the mean difference of Group A and Group B. In the analysis and interpretation of VAS between Group A and Group B, the unpaired t value of 6.013 was greater than the tabulated t value of 2.4 which showed that there was notable significant difference at 0.0001 level between mean difference of Group A and Group B. The value of mean for Group B was 3.87 which was higher than the mean value of Group A 2.20 shows that there was a significant reduction in pain and improvement in function in Group B compared to Group A in response to intervention. In the analysis and interpretation of chronic neck pain and disability index scale for pain, the unpaired t value of 4.69 was greater than tabulated t value of 2.04 at 0.0001level which showed that there was statistically significant difference between Group A and Group B. The mean value of Group A was 5.07 Group B was 10.07 Mean difference was 5.0 which showed that there was significant reduction in pain in Group B than Group A after the response to treatment.

CONCLUSION:

Based on statistical analysis and interpretation the results of this study showed that there was significant enhancement in both Groups. The result also showed that the subject who took part in experimental Group B had shown that there was decrease in Neck pain and increase in external range of motion than Group A.

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