



ORIGINAL RESEARCH PAPER

Physiotherapy

COMPARING THE EFFECTIVENESS OF MCKENZIE EXERCISES AND SUBOCCIPITAL RELEASE TO CRANIOVERTEBRAL ALIGNMENT AND DISABILITY IN FORWARD HEAD POSTURE AMONG COLLEGE GOING STUDENTS COMPARATIVE STUDY

KEY WORDS:

Craniovertebral angle, Neck Disability Index, McKenzie exercise, Suboccipital Release.

Vinothini Govindhasamy*

Final Year Student, KMCH College of Physiotherapy, Coimbatore.
*Corresponding Author

Tamilarasan Anthoni. J

Assistant Professor, KMCH College of Physiotherapy, Coimbatore.

ABSTRACT

The aim of the study was done to evaluate the effect of McKenzie exercise and Suboccipital release to college going students with forward head posture. It is a comparative study. 20 subjects were selected between the age group of 19 - 25 years among college going students and categorized into two groups- Group A and Group B. This study was conducted for a period of 4 weeks. The improvement of the subjects was measured using craniocervical angle and neck disability index after the intervention. The pre-test and post-test values are analysed using paired 't' test and independent 't' test. There was a significant improvement in angle and reduction in forward head posture in Group A (McKenzie exercise) among the college going students. Hence the study concluded that McKenzie exercise was effective compared to Suboccipital release in forward head posture.

INTRODUCTION

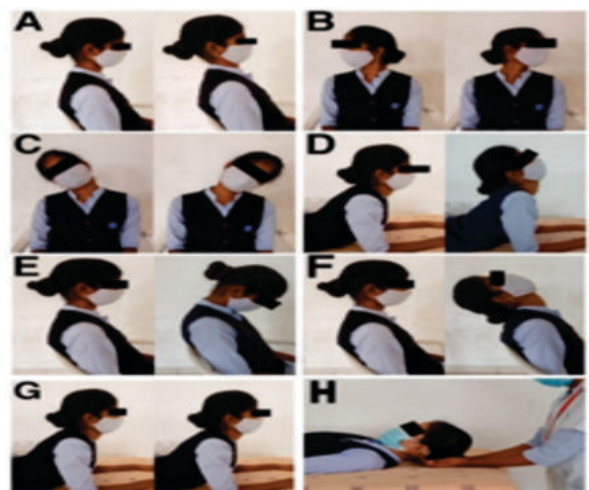
Proper posture is the state of musculoskeletal balance. An ideal posture is when the external auditory meatus is aligned with the vertical postural line as seen in side view.[1] Forward Head Posture is identified as the displacement of head anteriorly with craniocervical angle lesser than 50 degrees. Here the Centre of gravity shift and the upper body shift backward with shoulder slumped and increases middle cervical spine extension and lower cervical spine flexion. These changes can lead to abnormal cervical flexors and shortening of the opposing cervical extensors [2]. Forward Head Posture is assessed by Measuring craniocervical angle. It is measured using "ON PROTRACTOR" application. This application is freely available in the Google app store. This allows taking pictures and drawing an angle by touching the screen at the reference points. Participants were made to sit on a stool and were instructed to focus at a particular point on their eye level. For measuring craniocervical angle using this application. Two markers were used: one placed on C7, the second on tragus. The angle between the line joining C7 to tragus and a vertical line from C7 was measured and photographs were taken.[3] The McKenzie method was developed in the 1960's by Robin McKenzie in New Zealand.[4] This protocol has been employed in the treatment of mechanical neck pain in three syndromes. [5] Briefly, the Derangement Syndrome involves mechanical obstruction to movement within the joint.

Dysfunction Syndrome involves pain caused by the mechanical loading of structurally impaired soft tissues and in Postural Syndrome pain develops from prolonged overloading of tissue.[6] It stresses self-treatment through posture correction and repeated exercise movement at end range. [5] This focus on flexibility of muscle groups around the cervical spine which maintain normal spine alignment. [7] Neck pain can arise from any neck structure and thoracic spine including the sub occipital region. [8]

The sub occipital muscles are rectus capitis posterior major and obliquus capitis inferior which helps in extension and rotation of the head, rectus capitis posterior minor and obliquus capitis superior which helps in extension of head. [9]. This technique is also termed nuchal line inhibition. It has a positive short-term effect on pain and pain pressure threshold in neck pain. [10] The sub-occipital release technique immediately improved forward head posture, results in increasing craniocervical angle in asymptomatic subjects.[11]

It is a Comparative study. 20 Subjects with forward head posture were selected by the following inclusion and exclusion criteria. 19-25 years old Both males and females with the craniocervical angle of less than 50 and 25% to 34% of neck disability index were selected. Subjects with Cervical fracture or trauma, Cervical tumours, Cervical disc prolapse, Psychiatric disorders, History of surgery in neck, Inflammatory disease like bursitis, tendinitis, capsulitis and taking medication for neck pain. "ON PROTRACTOR" smartphone application was used to measure the Craniocervical angle and the Neck Disability Index (NDI) was used to measure the Quality of life. 3 times a week for 4 weeks treatment duration of 4 months study duration. The selected subject was assigned into 2 groups. 10 subjects for McKenzie exercise and 10 subjects for suboccipital release. The pre-test was carried out prior to the experiment and the post test was carried out on the day of study completion via the same method.

McKenzie exercise program Participants are instructed to maintained peak isometric force for 7 seconds for a total of 15 repetitions, completed one set for 20 minutes per day. This exercise programs were containing (A) Retraction for neck from sitting position (B) Rotation in head (C) Lateral bending in head (D) Extension for neck from lying position (E) Flexion for neck from sitting position (F) extension of neck in sitting and (G) chin tuck in lying.



H) Sub occipital release is applied before the McKenzie exercise by reducing stress on the deep cervical tissues aimed at the suboccipital muscle to the cranio-cervical

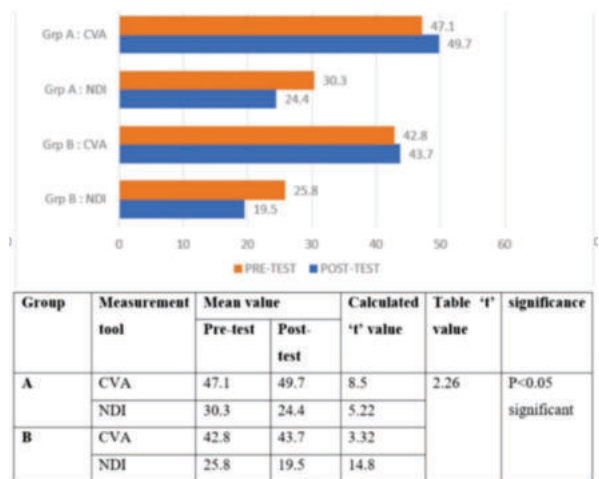
MATERIALS AND METHODOLOGY

region. For application the therapist positioned him/ herself over the head of the subjects, placing the fingertip just Sub occiput of subjects and support occiput of the subjects with palm. The base of the skull on the hand with 90° flexion of the metacarpophalangeal joints. Maintaining the technique until the relaxation of muscles with mild traction once relaxed place head to bed smoothly. By the time ask the subjects to close the eyes to prevent the eye movements that could influence sub occipital muscle tone. The time duration is 4 mints.

The data were collected from the samples and they were processed with the application of paired t- test for pre and post intervention; unpaired t- test was used to compare the outcome measure of both groups at 0.05 level significant

RESULTS

Table 1 (graph 1): Comparison between the pre and post-test values of craniovertebral angle and neck disability index in group A and B



In group A, results showed significant differences in improvement on CVA (8.5) and NDI (5.22) which is greater than table value (2.26).so the significant improvement in craniovertebral angle and neck disability index in group A.

In group B, results showed significant differences in improvement on CVA (3.32) and NDI (14.8) which is greater than table value (2.26).so the significant improvement in craniovertebral angle and neck disability index in group B.

Table 2: Comparison of values of both CVA and NDI between group A and group B



Table 2 displays the of values of both CVA and NDI between group A and group B. In both group A and B results showed significant differences in improvement on CVA and NDI scores which is greater than table value (2.26).

On comparison, McKenzie exercise in group A was found to produce more statistically significant in craniovertebral angle and neck disability scales than Suboccipital release in group B.

DISCUSSION

The aim of the study was to increase the craniovertebral angle and decrease the disability for forward head posture which is the most common among the college going students and mainly improved by McKenzie exercise and Sub occipital Release.

McKenzie exercises are set of exercises which focus on flexibility of muscle groups around the cervical spine which helps to maintain normal spine alignment and improve posture. It stresses self-treatment through posture correction and repeated exercise movement at end range performed with high frequency.

The sub-occipital release technique immediately improved forward head posture; resulting in significant increase in craniovertebral angle. The sub-occipital release technique is also termed nuchal line inhibition. The sub-occipital release technique has a positive short-term effect on pain and pain pressure threshold in subjects with neck pain.

The study was conducted with 20 subjects who were selected on the inclusion and exclusion criteria. They were divided into two groups. Subjects in group A received McKenzie exercise whereas group B received Sub occipital release.

Both the groups were assessed by craniovertebral angle to evaluate the posture and neck disability index to find the disability. (Pretest values were assessed).

Paired't' test was used to interpret the results within the group and after the intervention and Independent't' test was used to interpret the results between the group.

At the end of the 2 days treatment protocol, again assessed by using the same Craniovertebral Angle and Neck Disability Index to evaluate the posture and disability (post-test were assessed) to both the groups. Compare the results of both the groups.

Group A have effect of improvement in posture and reducing disability than the Group B. Hence Forward Head Posture is treated better in Group A which received McKenzie exercise than Group B which received Suboccipital Release.

CONCLUSION

The study revealed that there was significant difference in both the groups, but Group A showed more betterment than Group B. Thus, this study is proving that McKenzie exercise helps to improve craniovertebral angle and reduce disability in Forward Head Posture than Suboccipital Release.

In this study, only 20 subjects within the age group of 19-25 were taken and also 2 outcome measures only used in this study. So, for the future study for more accurate results, large sample size, many outcomes, prolonged study duration and all age group are my suggestions.

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