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Original Research Article

EFFECTIVENESS OF SNAG MOBILIZATION ON COMPUTER PROFESSIONALS WITH MECHANICAL NECK PAIN AND MOBILITY DEFICIT

Akshay Pal *[1], Anand Misra [2].

*[1] Teaching Associate in Department of Physiotherapy, SAIMS, Indore, India.

[2] Professor in Department of Physiotherapy. IIMS, Indore, India.

ABSTRACT

Background: There is limited evidence available which support that SNAG Mobilization (manual therapy) can be used as an intervention in the management of mechanical Neck Pain.

Study Design: experimental study design & 20 to 50 years of age, both male and female.

Methods: Patients diagnosed with computer professionals with mechanical Neck Pain and mobility deficit underwent a standard evaluation including the Neck disability Index (NDI), and active Neck range of motion (ANROM). 100 patients were randomly divided in two groups, to be treated with either Conventional therapy or Manual therapy approach. Outcomes of treatment were captured on the 1st day and after 6th week of the treatment session.

Results: The data was analysed using sample 't' test In this study after administration of exercises, the Neck Disability index of computer professionals of both the groups, A and B were improved. But, Better Disability index experienced by computer professionals of group B than computer professionals of group A. Overall, the pain status was found to be different after administration of exercises in groups.

At post intervention, the mean difference in Neck Disability index among computer professionals between group A and group B were statistically highly significant ($p<0.001$).

Conclusion: In this study the result showed that the computer professionals intervened with sustained natural apophyseal glide mobilization(SNAG'S)with conservative treatment is better and more improved in angles of neck flexion and extension, lateral rotation, bending at right and left sides and neck disability index, than computer professionals treated with conservative treatment alone.

KEY WORDS: SNAG Mobilization, Mechanical Neck Pain, Mobility deficit, Neck disability index.

Address for correspondence: Dr.Akshay Pal, Teaching Associate in Department of Physiotherapy, SAIMS, Indore, India. **E-Mail:** akshay.pal56@gmail.com

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INTRODUCTION

Neck pain is a very common problem that can negatively affect the patient's quality of life, and may result in medical consumption, absenteeism, and disability. A neck pain that lasts more than 3 months is defined as chronic [1]. Neck pain is second only to low back pain in frequency [2]. About 67% of all individuals suffered neck pain at some stage of their life which resolved within 1 month. However, the prevalence of chronic neck pain (CNP) approaches 14% [3].

Pain is categorized by its duration, as acute when lasting up to 6 weeks, sub-acute when lasting from 6 weeks to 3 months and chronic when lasting for more than 3 months. It is estimated that 22% to 70% of the population are

likely to have neck pain during their lifetime [4-6].

Sitting at desk hunched over computer keyboard can be a major cause of neck pain and neck problems. When combined with the fact that many people with desk jobs spend most of their time sitting without moving for hours at a time, it's no surprise that desk jobs are associated with increased instances of neck pain [7]. By implementing a few self-help techniques, may be able to reduce neck pain, improve mobility in cervical spine and prevent the development of certain neck problems [8].

Manual therapy has a variety of procedures directed to the musculoskeletal structures for the treatment of mechanical pain. It includes soft tissue therapies, such as the many types of massage, focal soft tissue therapy, such as trigger point therapy, shiatsu, acupressure, mobilization, manipulation, and manual traction [9-10].

In 1980s Brian mulligan, developed NAGS, SNAGS and mobilization with movement (MWMs) articular techniques. Natural apophyseal glides (NAGs) are accessory movement, gliding one spinal facet upon its neighbour [11]. Sustained natural apophyseal glides (SNAGs) are similar accessory glides performed on a actively moving through the previously painful or restricted range of movement MWMs apply the principle of accessory glide plus active movement too, but they are applied to peripheral joints.

The fundamental belief of mulligan's concept are:

· All techniques are carried out within a pain free framework.

· The accessory treatment force is applied along the facet planes of the spinal joints.

· The technique are developed to overcome joint 'positional faults'

· Repetitions of glide with active movement.

· Pain free over-pressure at the end of range.

· Self mobilization.

Brian mulligan introduced a novel concept of the SNAGs for cervical, thoracic and lumbar spines. SNAGs are a combination of sustained facet glide with movement. The SNAGs are defined as sustained repositioning of one articular surface on its neighbour while a movement or function is undertaken. SNAGs are always involved with end range of joint movement [11,12]. Sustained natural apophyseal glides (SNAGs) are very useful in the treatment of cervical, thoracic and lumbar spine. SNAGs was developed by Brian mulligan which is combination of a sustained facet glide with movement applied at the facet joint between cervical C2 to C7. It is usually done in sitting or standing SNAGs mobilization done on facet where glides are sustained with active movement followed by overpressure and glides are maintained until the joint returns to its original position [13,14].

METHODOLOGY

The study design was experimental study and different subject design. It was conducted in the Out-patient Department of Physiotherapy, Sri Aurobindo Institute of Medical Sciences, Indore Department of Physiotherapy, IIMS Indore & Department of Physiotherapy, BHRC Indore. 100 subjects who fulfilled the inclusion and exclusion criteria were equally divided into two groups by random sampling method.100 subjects suffering from mechanical Neck Pain and mobility deficit were available for the study and later divided into two equal halves of size 50 that constituted into two groups and further designated as "group A" and "group B". The patients with mechanical Neck Pain and mobility deficit in group A received Conservative physiotherapy treatment while rest of other patients of group B received SNAG'S Mobilization and Conservative physiotherapy treatment. The patients assessed by NDI scale and AROM analysis at baseline and were treated for 6 weeks and reassessed by the same. NDI scales have been shown to be reliable and valid [15].

Inclusion Criteria:

1. Computer professionals with mechanical neck pain lasting more than 3 months. 2. Hypo mobility of the cervical range of motion. 3. Age group 20-50 year of age, both sex groups male and female. 4. Non disco genic mechanical neck pain and neck stiffness. 5. No physiotherapy treatment taken from last 6 months

Exclusion Criteria:

1.Any contra indication to spinal mobilization

(SM) such as inflammation, infection, congenital malformation, trauma and cerebrovascular abnormalities. 2. Radiating pain to shoulder and upper limbs. 3. Trauma or tumor around the neck. 4. Prior surgery to cervical and upper thoracic spine. 5. Any neurological signs.

Group A (Conventional therapy): subjects were treated with

1. Moist heat pack for 10 min.

2. Stretching Of Cervical And Upper Quadrant Muscles(2 to 4 repetitions with 15-30 second hold).

3. Dynamic isometric exercise using resistance band(2 to 3 sets of 10-15 repetitions.

4. Postural advice

Group B (Manual therapy SNAGs Mobilization): subjects were treated with

1. Moist heat pack for 10 min.

2. SNAGs Mobilization (5 to 10 sets of 3-5 repetition)

3. Stretching Of Cervical And Upper Quadrant Muscles(2 to 4 repetitions with 15-30 second hold)

4. Dynamic isometric exercise using resistance band(2 to 3 sets of 10-15 repetitions.

5. Postural advice.

Fig. 1: SNAGS for cervical extension. Picture 2 snags for cervical flexion.

Fig. 2: SNAGS for cervical side bending.

Fig. 3: SNAGS for cervical rotation.

Fig. 4: Showing dynamic isometric exercises using resistance thera band.

RESULTS

Table 1: Comparison of Angles of Neck Flexion and Extension, and Neck Disability Index between Baseline and Post Intervention in Group A and Group B.

Parameter		Sampling Stage	Scatter Mean ±SD	Mean Diff	t-statistic	LOS
Group A (Control)	Flexion (degree)	Baseline	38.02±4.64	7.56 degree	12.2	# p=0.000
		Post Intervention	45.58±2.83			
	Extension (degree)	Baseline	48.68±4.16	6.78 degree	11.8	# p=0.000
		Post Intervention	55.46±2.76			
	Neck Disability Index (%)	Baseline	53.54±3.89	33.86%	43.65	# p=0.000
		Post Intervention	19.68±3.67			
Group B (Experimental)	Flexion (degree)	Baseline	37.98±4.45	11.04 degree	18.2	# p=0.000
		Post Intervention	49.02±1.45			
	Extension (degree)	Baseline	48.58±4.14	10.34 degree	16.37	# p=0.000
		Post Intervention	58.92±2.04			
	Neck Disability Index (%)	Baseline	52.72±4.51	40.60%	67.74	# p=0.000
		Post Intervention	12.12±2.57			

Table 2: Measurement of Change in Right and Left Sides Angle of Lateral Rotation and Bending Between Baseline and Post Intervention in Groups (A and B).

Parameter		Sampling Stage	Scatter Mean ±SD	Mean Diff	t-statistic	LOS
Group A (Control)	Right Side Lateral Rotation	Baseline	70.20±4.01	7.14 degree	12.77	p=0.000#
		Post Intervention	77.34±1.44			
	Left Side Lateral Rotation	Baseline	70.02±2.54	6.92 degree	20.71	p=0.000#
		Post Intervention	76.94±1.58			
	Right Side Bending	Baseline	35.76±2.91	6.18 degree	14.69	p=0.000#
		Post Intervention	41.94±1.25			
	Left Side Bending	Baseline	36.42±2.38	5.98 degree	16.63	p=0.000#
		Post Intervention	42.40±1.26			
Group B (Experimental)	Right Side Lateral Rotation	Baseline	69.02±3.38	10.24 degree	23.16	p=0.000#
		Post Intervention	79.26±2.83			
	Left Side Lateral Rotation	Baseline	69.50±3.56	9.74 degree	16.84	p=0.000#
		Post Intervention	79.24±2.96			
	Right Side Bending	Baseline	34.96±2.67	8.58 degree	20.52	p=0.000#
		Post Intervention	43.54±1.50			
	Left Side Bending	Baseline	35.76±2.36	8.26 degree	21.87	p=0.000#
		Post Intervention	44.02±1.64			

In this study after administration of exercises, the Neck Disability index of computer professionals of both the groups, A and B were improved. But, Better Disability index experienced by computer professionals of group B than computer professionals of group A. Overall, the pain status was found to be different after administration of exercises in groups. At post intervention, the mean difference in angles of flexion and extension and Neck Disability index among computer professionals between group A and group B were statistically highly significant. ($p<0.001$).

Among computer professionals of group A, the average neck disability index (19.68±3.67 %) found to be significantly reduced at post administration as compared to average neck disability index (53.54±3.89 %) at baseline sampling stage. These mean difference of 33.86% in disability index between baseline and post administration among computer professionals of group A were statistically strongly significant (p=0.00)

Among computer professionals of group B, Average (Mean ± Standard deviation) neck disability index (12.12±2.57 %) among computer professionals of group B found to be significantly reduced at post sampling stage as compared to average neck disability index (52.72±4.51 %) at baseline sampling stage. These mean difference in disability index (40.60 %) between baseline and post administration among subjects of group B were statistically highly significant (p=0.000).

DISCUSSION

This study is to find out the in effectiveness of SNAGs mobilization in computer professionals with mechanical neck pain and mobility deficit. Self SNAGS as a treatment technique can be incorporated for chronic neck pain and is more effective [16]. The SNAG treatment had an immediate clinically and statistically significant sustained effect in reducing cervical pain and increasing extension range of motion [17]. Several systematic reviews since 1996 to present have reported that spinal manipulation and mobilization is little known for its efficacy in patients with neck pain, the studies also show that it probably provides short term benefits for some patients with mechanical neck pain [18]. Studies have been done by giving ergonomic advice combined with stretching and strengthening exercise have shown that they can reduce pain and increase functional activities [19].

The Mulligan concept is integral to the clinical practice of many physiotherapists and includes techniques such as sustained natural apophyseal glides (SNAGs), natural apophyseal glides (NAGs) and mobilization with movements (MWMs).Several clinical studies have suggested that these techniques are an effective physio-

therapeutic tool in the treatment of neuromuscular pain and dysfunction [20]. SNAGS are sustained natural apophyseal accessory glides where by the patient attempts to actively move a painful or stiff joint through its range of motion whilst the therapist overlays an accessory glide parallel with the treatment plane. The neurophysiologic mechanism by which spinal mobilization therapy is effective in reducing pain is not completely understood [21,22].

One possible mechanism for improvement in the intervention group in the present study could be that the manipulative procedure may induce a reflex inhibition of pain or reflex muscle relaxation by modifying the discharge of proprioceptive group I and II afferents. A second possible mechanism for the improvement in the intervention group might be a pre synaptic inhibition of segmental pain pathways and possibly activation of the endogenous opiate system [23,24].

Limitation & future recommendation: Present study had a few limitations, like; the sample study was small, future researches can be based upon a relatively larger sample that is more representative of the population. Another limitation of present study was short term effect of SNAG Mobilization was assessed, i.e., long term effect can be assessed.All measurements were taken manually and this may introduce human error which could affect the reliability of the study. NDI are subjective assessment tool, so there might be some errors while filling the scores by patient themselves. Further study can be done on patients with cervicogenic headache associated neck pain or radiating neck pain in computer professional with mobility deficit.

CONCLUSION

In conclusion, this experimental study was performed on 100 subject and 50 subjects in each group with complaints of neck pain and mobility deficit with conventional physiotherapy and SNAG mobilization. The group treated with SNAG approach had significant improvement in ROM of cervical joint, pain and disability due to mechanical neck pain and mobility deficit than those treated with conventional physiotherapy alone.

Conflicts of interest: None

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