

# Effectiveness of Dry Needling on Pain and Range of Motion in Patients with Cervicogenic Headache

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**Abstract—Cervicogenic headache is one of the most common musculoskeletal conditions in physical therapy practice. Almost 2-4% of the global population suffer from Cervicogenic headache . Mobilization and manipulation is the common intervention for the management of Cervicogenic headache . Although it is a musculoskeletal disorder but very little importance given on muscular system. Total 75 patients participated in this study and were divided into two groups first group-manual therapy group who were given C1-C2 SNAGs and second group-who were given a combination of dry needling and C1-C2 SNAGs. The parameters used for measurement were numeric pain rating scale(NPRS) and range of motion(ROM) measurement using universal goniometry. Both the groups showed improvement however, the second group availing combination therapy showed significant improvement. The study results suggest that C1-C2 SNAGs when combined with dry needling is more effective for the management of patients with CGH.**

**Keywords—** Cervicogenic Headaches, Dry needling, NPRS, ROM.

## I. INTRODUCTION

Pain in one side of the head and/or face which originated from upper cervical spine is known as cervicogenic headache(CGH). The International Headache Society categorized the cervicogenic headache as a secondary headache.<sup>1</sup> 47% of the global population suffers from a headache whereas 15% to 20% of these are CGH. 4% in the general population suffers from cervicogenic headache. Females and males ratio is 4:1<sup>2,3</sup>

The variety of invasive and noninvasive treatment for cervicogenic headache have been reported but the most beneficial or gold standard treatment has not been still done. Manual therapy is often advocated for managing CGH. But very little focus given on muscle system although it is a musculoskeletal disorder. Dry needling, has grown in popularity and it is a relatively unique part of physical therapy practice. Number of study suggested that dry needling is a very effective technique to manage the musculoskeletal disorder.<sup>5-7</sup> Several study support that manual therapy is useful technique to reduce pain and improving rang of motion.<sup>10-12</sup> But very less number of study given concentration on muscular

system although some study suggested that multimodal treatment is more beneficial in neck disorder.<sup>8,9</sup> CGH is musculoskeletal condition. No study has been done manual therapy in combined with manual therapy.

## II. METHODOLOGY

The study was conducted at Lovely Professional University Phagwara, Punjab. Total 94 subjects was assessed for the study. Both males and females at the age limit of 20-50 years were participated in this study those who fulfill the inclusion criteria which is published by IHS<sup>1</sup>. Ethical permission was taken from the university human ethical committee board. All the subjects were divided into two groups by simple randomization method. Baseline assessment for were taken before and after the treatment duration. For pain assessment NPRS scale was used and for range of motion universal goniometry was used. All the patients were informed about the adverse effects of dry needling and then consent form was signed by the patient. Both the group were advised to do normal range of motion exercise as a home activities.

### A. C1-C2 SNAGS

The participant was in sitting position and the therapist stand at the side of the patient and ask him or her to move the head into the painful movement. Then head of the patient was kept between the forearm and the body of the therapist. The first three fingers hold around the base of the skull and the little finger lies over the spinouts process of C2 vertebra. Then the lateral border of the thinner eminence of other hand lies over the little finger of first hand. Pressure was applied on the spinouts process of C2 towards eyeball and the skull remains stable while giving glide. Maintain the glide for three times per second and repeat the procedure for 6-10 times.

### B. Dry Needling Technique

acupuncture needle was used(15 mm for sub occipital muscle and mm was used for par spinal and trapezoids muscle). Before inserting the needle therapist wear the hand gloves then treatment area was cleaned by antiseptic liquid then the trigger point was identified with palpation. The client was informed about pinprick sensation needling then the needle was inserted into the muscle.

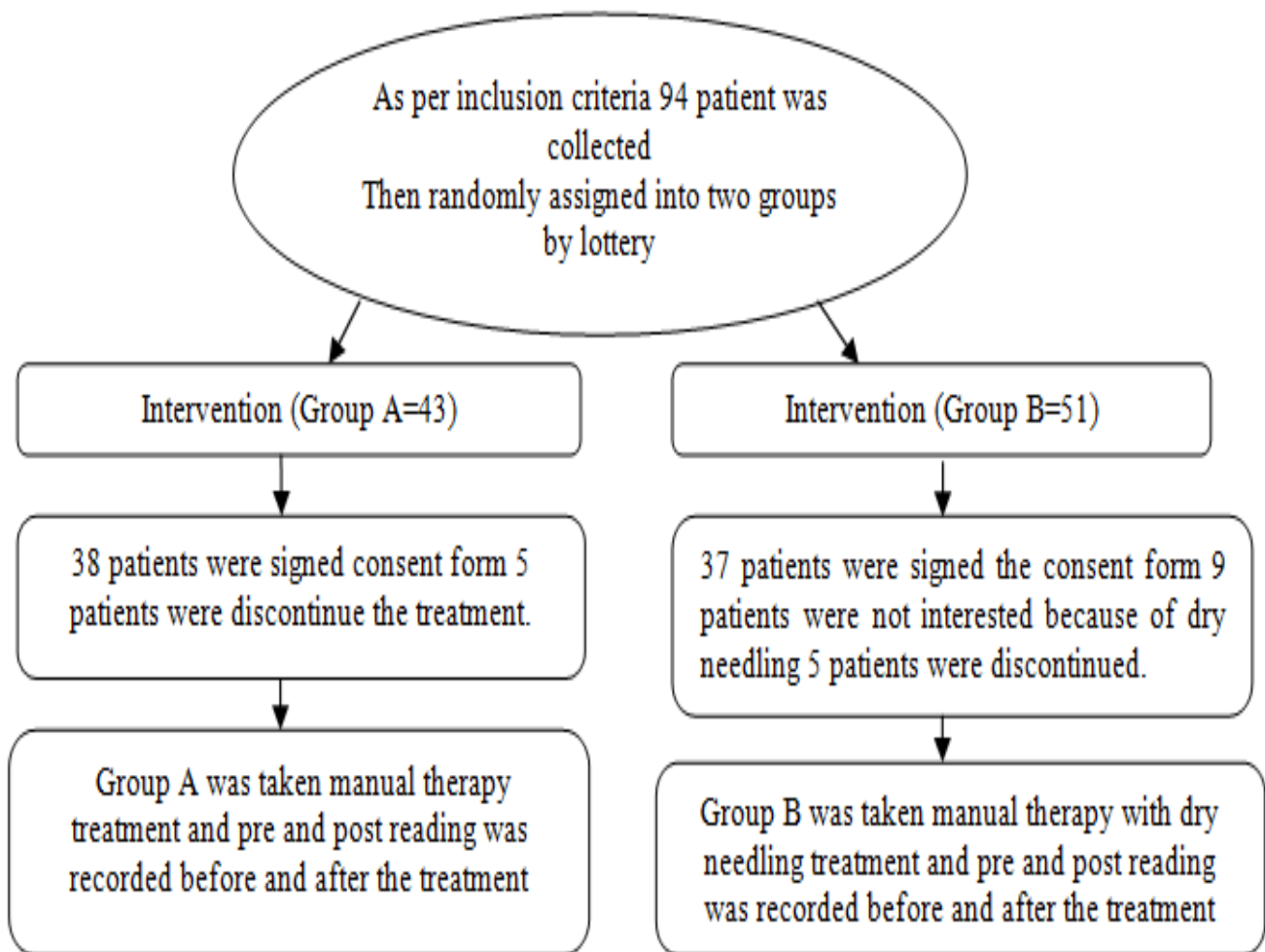


Fig. 1. Flow Chart Representing the Procedure of the Present Study.

**III. DATA ANALYSIS AND RESULT**

Seventy five patients were participated in this study. 38 patients were participated in the manual therapy group and 37 patients were in the combined group who received manual therapy and dry needling both. No significant difference was found between the group

demographic and clinical outcome at base line baseline(table 1 and table 2). Pain intensity was reduced both the group( $P < .0001$ ) and range of motion also was improved in both the group( $P < .0001$ ). Between the group showed that more reduction of pain and improved range of motion in the combined group (Table 3).

Group	N	Age	M	W
Manual therapy	38	37±9	13	25
Manual therapy with Dry needling	37	36±8	13	24
Total	75	37±8	26	49

Note. Mean Value±Sd N= Number of Patient, M= Male, W=Women, Age= Years

Table: 1 Demographic Data.

Group	Outcome	Pre (Mean± SD)	Post (Mean± SD)	Differences within the group	p-value
Group A	NPRS	6.66±.97	3.13±1.5	3.53	.0001
	Extension	46.18±7.9	57.76±7.41	11.58	.0001
	Flexion	35.53±7.5	43.55±6.7	8.02	.0001
	Left side flexion	30.39±5.85	37.36±5.29	6.97	.0001
	Right side flexion	28.55±6.5	36.44±6.03	10.89	.0001
	Left rotation	53.55±10.6	66.18±9.84	12.63	.0001
	Right rotation	52.10±9.90	65.39±9.18	13.29	.0001
Group B	NPRS	6.59±1.24	0.16±.37	6.43	.0001
	Extension	49.07±8.5	68.42±5.5	19.35	.0001
	Flexion	38.50±1.28	50.92±5.56	12.42	.0001
	Left side flexion	33.29±5.52	44.01±4.9	10.72	.0001
	Right side flexion	30.26±7.06	44.21±5.95	13.95	.0001
	Left rotation	52.23±8.67	74.2±5.87	21.97	.0001
	Right rotation	55.50±9.35	75.26±5.26	19.76	.0001

Note. Pain Intensity Measured by NPRS(Numerical Pain Rating Scale), Rang of Motion Measured by Universal Goniometer.

Table: 2 Paired T-Test For Pain Intensity and Range of Motion

Outcome	Group A (Mean± SD)	Group B (Mean± SD)	T value	P value
NPRS	3.13±1.5	0.16±.37	7.88	.0001
Extension	57.76±7.41	68.42±5.5	7.01	.0001
Flexion	43.55±6.7	50.92±5.56	6.31	.0001
Left side flexion	37.36±5.29	44.01±4.9	5.10	.0001
Right side flexion	36.44±6.03	44.21±5.95	6.01	.0001
Left rotation	66.18±9.84	74.2±5.87	4.31	.0001
Right rotation	65.39±9.18	75.26±5.26	5.68	.0001

Note. Mean Value±Sd, Statistically Significant for Pain and Range of Motion (P < .0001)

Table 3: Un-Paired T-Test for Pain Intensity and Range of Motion

#### IV. DISCUSSION

The result of that study provided that manual therapy was effective for CH but combined with dry needling was showed that more beneficial for CGH. It is recognized that CGH is a multidimensional disorder involved cervical dysfunction and muscular components so all aspects of this condition shall be treated during management.<sup>1</sup> The result of this study support the hypothesis that combined treatment of Manual therapy and dry needling substantially reduce pain and improve, ROM and in patients with CH.

The number of study showed that due to structural changes of upper cervical spine increase the sensitivity of trigeminal nucleus. The irritation of sensory neuron of supplying muscle

my developed central mediated muscle spasm.<sup>4,17</sup>that’s leads to pain and restricted ROM.

Dry needling which produce a kind of mechanical pressure inside the muscle as a result electrically polarized the muscle and connective tissue which cause the collagen fibers also became electrically polarize. So it enhance the tissue remodeling.<sup>13</sup> The recent study suggested that dry needling has been shown promising effects on muscular dysfunction.<sup>14-16</sup> SNAGs are beneficial in correcting joint positional faults within improved quality movement patterns (mulligan-2002).

The result of this study showed that the is a improvement in both the group but the combined treatment of dry needling

and manual therapy showed more significant improvement in reducing pain and increasing ROM. Study suggested that dry needling desensitize the neural pathway and normalize the muscle tone by producing endogenous substances(eg- Bradykinin, Prostaglandins, Serotonin). These substances are also activate the mechanoreceptors.(Mense-2001)

## V. CONCLUSION

The study showed that the combined treatment of manual therapy and dry needling are more effective in patients with cervicogenic headache in reducing pain and improving range of motion. Although there was a improvement in both the groups. So for the better outcomes dry needling can be used in physical therapy practice for musculoskeletal conditions.

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