

# Comparison of Routine Physiotherapy with and without Thoracic Mobility Exercises in patients with Chronic Neck Pain

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## ABSTRACT

**Background:** Cervical pain is a perception anywhere in the posterior region of the cervical spine.

**Aim:** To compare the effectiveness of routine physical therapy with and without thoracic mobility exercises in the treatment of chronic neck pain patients.

**Study Design:** Randomized control trail.

**Methodology:** Total of 81 participants having chronic neck were selected with age ranging from 25 to 53 years. NDI and VAS Performa's were filled according to study protocol. Patients were divided into two groups A (n=41) and B (n=40) and after every four session's, questionnaires were filled and total 12 sessions will be given to each patients. NDI scale and VAS were used as data collection tool. Analysis of data was done by SPSS v.26. Shapiro-Wilk test was applied.

**Results:** Group A consist of n=41, 50.62% of total data and Group B consist of n=40, 49.38% of data as well. In Group-A, minimum age was observed 25 years and 55 years was the maximum age that accounted similarly 20 years was the minimum age of group-B and 52 years was the highest age.

**Conclusion:** It was concluded that people with interminable neck desolation who got the mix of upper thoracic spine preparation and versatility exercise showed better in general transient results as far as the VSA, NDI **Key words:** Chronic Neck Pain, VSA, NDI and Thoracic Spine Mobility.

## INTRODUCTION

Pain is a sensation that anyone feels due to tissue damage<sup>1</sup>. Chronic pain is of duration greater than 03 months. Cervical pain is a perception anywhere in the posterior region of the cervical spine. Literature review defines neck pain as pain sensation involving neck region with or without radiation to the head, trunk, and upper limbs<sup>2</sup>. This is a common health issue among population nowadays due to many reasons like faulty neck position, continuous stress and single head position while using electronic gadgets. Unfortunately, its incidence is higher among females (15%) in comparison to males (9%). Chronic pain affects sensory processing of the affected body region badly leading to detectable changes in the CNS and motor control<sup>3</sup>.

Among all musculoskeletal disorders, neck pain occurs commonly as reported by previous studies. Few studies reported that the age-standardized lifetime prevalence of neck pain ranges from 59-66.7%<sup>4,5</sup>. This health problem affects individuals both economically and physically<sup>6</sup>.

This is a treatable disease. With modern era and advancement, it has been seen that different physical exercises as a treatment option for neck pain has better clinical outcomes<sup>7-9</sup>. Its patho-physiology showed disturbances in the biomechanics of the thoracic spine as a primary contributor to it<sup>9</sup>. One previous study showed that thoracic manipulation immediately improves neck pain<sup>9</sup>.

Chronic neck pain significantly affects surrounding muscles of neck and cervical spine. As body is anatomically connected with each other so mobility exercises of any region around the neck reduces this pain. A study was conducted in 2004 to compare the onset of activation of superficial and deep cervical flexor muscles with unilateral or bilateral rapid arm movement. When the subject with history of neck pain flexed the arm, the onset of deep cervical flexor muscles and contra-lateral sterno-cleido-mastoid (SCM) and anterior splenii (AS) muscles was significantly delayed. Which concluded that the delay in the activity of neck muscles is significantly indicated the deficit in the feed forward control of cervical spine<sup>10</sup>.

In a previous study it is reported that thoracic spine is the area that is most often manipulated<sup>11</sup>. Recent guidelines for

treating neck pain recommends use of thoracic thrust manipulation based on weak evidence<sup>12</sup>. As there is lack of local data regarding the role of thoracic mobility exercises as treatment option among patients having chronic neck pain hence current study was planned.

The objective of the study was to compare the effectiveness of routine physical therapy with and without thoracic mobility exercises in the treatment of chronic neck pain patients.

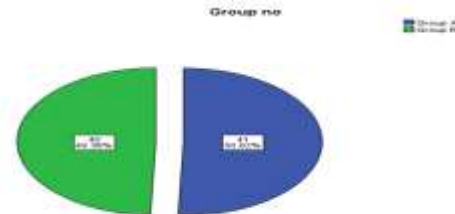
## METHODOLOGY

Total of 81 participants having chronic neck were selected with age ranging from 25 to 53 years. After IRB permission study was conducted at PSRD hospital in Lahore. Exclusion criteria included cervical radiculopathy, any history of Trauma and congenital diseases. NDI and VAS Performa's were filled according to study protocol following ethical approval. Patients were divided into two groups A (n=41) and B (n=40) and after every four session's, questionnaires were filled and total 12 sessions were given to each patients<sup>13</sup>. Analysis of data was done by SPSS v.26. Shapiro-Wilk test was applied. A p-value  $\leq 0.05$  was taken as significant. Descriptive data presented as frequency and percentages.

## RESULTS

Group A consist of 41(50.62%) of total data and Group B consist of 40(49.38%) of data as well as shown in figure-1. Age (years) among both groups with minimum and maximum age was shown by figure-2 as bar chart.

Figure-1: Distribution of participants among groups



P-value < 0.0001 for Kolmogorov and Shapiro-Wilk which means we accepted H<sub>A</sub> that is H<sub>A</sub>= Data is not normal. So, we used non

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parametric test for VSA. Wilcoxin was used at place of Post Hoc for pair-wise comparison as shown in table-1&2.

Table-1: Descriptive Statistics

Group		N	%age	Median	IQR
Group A	Visual analogue scale pre treatment	41	100.0%	8.0000	0.00
	Visual analogue scale session 4	41	100.0%	7.0000	0.00
	Visual analogue scale session 8	41	100.0%	6.0000	1.00
	Visual analogue scale session 12	41	100.0%	4.0000	1.00
Group B	Visual analogue scale pre treatment	40	100.0%	8.0000	0.00
	Visual analogue scale session 4	40	100.0%	7.0000	1.00
	Visual analogue scale session 8	40	100.0%	5.0000	1.00
	Visual analogue scale session 12	40	100.0%	2.0000	2.00

Table-2: Inferential Statistics for Visual Analogue Scale

VAS	GROUPS	MEDIAN ± IQR	P value	
A+B	VSA PRE TREATMENT	8±0	0.303a	
	VSA S4	7 ± 0	0.05a	
	VSA S8	5 ± 1	<0.0001a	
	VSA S12	3 ± 2	<0.0001a	
	A	VSA PRE TREATMENT	8 ± 0	<0.0001b
		VSA S4	7 ± 0	
		VSA S8	6 ± 1	
		VSA S12	4 ± 1	
	B	VSA PRE TREATMENT	8 ± 0	<0.0001b
		VSA S4	7 ± 1	
		VSA S8	5 ± 1	
		VSA S12	2 ± 2	
MEAN RANK				
A	VSA S4-VSA PRE TREATMENT	20	<0.0001c	
	VSA S8-VSA PRE TREATMENT	21		
	VSA S12-VSA PRE TREATMENT	21		
	VSA S8-VSA S4	19.5		
	VSA S12-VSA S4	21		
	VSA S12-VSA S8	21		
	B	VSA S4-VSA PRE TREATMENT	16.12	<0.0001c
		VSA S8-VSA PRE TREATMENT	20.50	
VSA S12-VSA PRE TREATMENT		20.50		
VSA S8-VSA S4		20.50		
VSA S12-VSA S4	20.50			
VSA S12-VSA S8	20.50			

Table-3: Descriptive Statistics

Group	NDI	N	Percent	Median	IQR
Group A	NDI1	41	100.0%	50.0000	1.00
	NDI2	41	100.0%	43.0000	7.50
	NDI3	41	100.0%	39.0000	1.00
	NDI4	41	100.0%	30.0000	.00
Group B	NDI1	40	100.0%	49.0000	1.00
	NDI2	40	100.0%	28.0000	2.00
	NDI3	40	100.0%	10.0000	10.00
	NDI4	40	100.0%	10.0000	.00

**Inferential Statistics for NDI:** Data collected for NDI was described statistically as percentage and frequency in table-3 while Inferential Statistics for NDI were shown in table-4.

Figure-2: Bar chart for age and groups

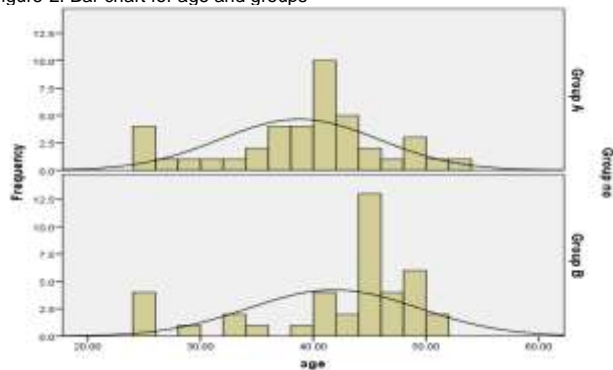


Table-4: Inferential Statistics for NDI

NDI	GROUPS	MEAN RANK	P value	
A	NDI PRE TREATMENT	53	<0.0001a	
	NDI S4	61	<0.0001a	
	NDI S8	61	<0.0001a	
	NDI S12	61	<0.0001a	
	B	NDI PRE TREATMENT	28	<0.0001a
		NDI S4	20.5	<0.0001a
		NDI S8	20.5	<0.0001a
		NDI S12	20.5	<0.0001a
	MEAN RANK			
	A	NDI PRE TREATMENT	50 ± 0	<0.0001b
		NDI S4	45 ± 9	
		NDI S8	45 ± 0	
NDI S12		30 ± 0		
B	NDI PRE TREATMENT	0 ± 0	<0.0001b	
	NDI S4	27 ± 0		
	NDI S8	10 ± 0		
	NDI S12	10 ± 0		
MEAN RANK				
A	NDI S4-NDIPRE TREATMENT	20	<0.0001c	
	NDI S8-NDI PRE TREATMENT	21		
	NDI S12-NDI PRE TREATMENT	21		
	NDI S8-NDI S4	23.5		
	NDI S12-NDI S4	21		
	NDI S12-NDI S8	21		
B	NDI S4-NDI PRE TREATMENT	20.50	<0.0001c	

## DISCUSSION

After effects of present investigation was related with previous researches that demonstrated satisfactory control and activation of cervico-thoracic spine among patients with neck torment<sup>9,11,14</sup>. The oddity of the present examination is that the outcomes propose that the mix of upper thoracic activation and portability exercise may furnish transient advantages to people with FHP.

FHP brought about twisting of joints because of poor stances for quite a while. Preparation caused up-gradation and augmentation of the upper thoracic spine<sup>15,16</sup>. As indicated by the reason for the activation, this examination demonstrated improvement of the CROM in the two gatherings; in any case, there was a noteworthy distinction between the two gatherings in cervical spine expansion. Past examinations additionally demonstrated the expansion of the scope of movement by improving joint hypo-portability and the attachment between delicate tissues when the joint activation procedure was connected to patients with mechanical neck torment<sup>17</sup>. Especially, it was accounted for that there were more upgrades of development impediment in patients with the most genuine torment. On account of remedial exercise, in this investigation, the adjustment exercise was directed in the lower cervical spine. Adjustment practice for the cervical spine was a low-force isometric exercise. In this way, better outcomes were acquired in the thoracic spine inferable from the distinction in power in spite of performing the two activities simultaneously. In spite of the fact that the CVA estimated from profile photos likewise demonstrated improved outcomes in the two gatherings. A past report announced that thoracic spine preparation with nonstop inactive improvement expanded joint portability and aided in improving the somatosensory framework<sup>18</sup>.

The distinction of the MDC and MCID of NPRS in the two gatherings is essential. In the present examination, the normal change score surpassed both the MDC and MCID values in the thoracic gathering. Despite the fact that the outcomes showed that there was a noteworthy inside gathering contrast in the thoracic gathering, no critical inside gathering distinction can be deduced in the cervical gathering. The distinction between the gatherings in NPRS was 1.4 focuses, which surpassed the MCID, demonstrating the clinically noteworthy impact of the thoracic spine activation and versatility work out. It was, nonetheless, thought about that the 95% CI (0.6, 2.3) of the distinction included lower esteems than the MCID. In this manner, despite the fact that the distinction in progress between gatherings was measurably critical, the clinical significance was unsure when the elucidation was performed based on the 95% CI. For the NDI, in spite of the fact that the normal change score was 12.2% in the thoracic gathering just,

which surpassed the MDC, the normal contrast in change scores between the two gatherings was 7%, which was lower than the MCID of NDI. Subsequently, despite the fact that the distinction in progress between gatherings for the NDI was again measurably noteworthy, the hole could be of little significance clinically when the translation was performed based on MCID. There was no association between the two gatherings in the torment affectability trial of the upper trapezius muscle. The motivation behind why the upper trapezius muscle was focused on was to recognize the impact of position improvement after the treatment, in light of the fact that the tone of the upper trapezius muscle was expanded and ended up more tightly because of upper cross disorder<sup>19-21</sup>. This investigation showed a critical impact in the two gatherings at about a month after the treatment. The muscle tone of the upper trapezius was diminished by the difference in stance through joint assembly, and cervical shakiness was improved through the helpful exercise. Notwithstanding, there was no collaboration between the two gatherings, and the MCID of PPT was not surpassed in light of the fact that the mediation for the cervical and thoracic spine in this examination had no immediate impact on the affectability of the upper trapezius muscle<sup>22-24</sup>. Additionally, it is hard to sum up the mediation consequences of this examination to male patients with mechanical cervical agony on the grounds that the example included just 9 men (23 ladies). Be that as it may, we thought about that the investigation results can be summed up to the normal populace since ongoing examinations have demonstrated that ladies have a higher pace of neck torment than men<sup>25</sup>. Future examinations with a long haul development and assessing the misleading impact, by researching three gatherings including a control gathering, ought to be led. Future examinations to look at the adequacy of various sorts and measurements of manual treatment, and perform long haul follow-up information gathering.

## CONCLUSION

People with interminable neck desolation who got the mix of upper thoracic spine preparation and versatility exercise showed better in general transient results as far as the VSA, NDI, than the individuals who got standard physiotherapy.

**Author's contribution: M&MA:** Conceptualized the study, analyzed the data, and formulated the initial draft.

**KA&HMS:** Contributed to the proof reading, **MA & WL:** Collected and analyzed data,

**Limitations:** Single centre study with small sample size and financial constrains.

**Conflict of interest: None**

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