Comparison of Mulligan Mannual Therapy Techniques with Kaltenborn Mannual Therapy Techniques in Patients with Nonspecific Neck Pain in Improvement on Neck Disability Index

Riffat Nazeer Ahmad[1], Hafiz Muhammad Asim[2], Rashid Hafeez Nasir[3]

[1]Senior Physiotherapist, Haq Orthopedic Hospital 18 Sanda Road, Lahore

[2]Assistant Professor, Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore

[3]Assistant Professor, Riphah international university, Department of Physical Therapy, town ship, Lahore

Abstract: *Nonspecific neck pain (NSNP) the most discomforting pain all over the world mostly include age group of 20-55 because of nature of occupation like office-workers, computer-users, students, tailors, dentists, surgeons, writers even every second person has been becoming a victim of NSNP due to stress, strain and work overload. The purpose of this study was to compare the change on neck disability index (NDI) by comparing Mulligan manual therapy techniques with keltenborn manual therapy technique for the better treatment of NSNP. Qausi experimental study was conducted at Haq orthopedic hospital Lahore, Pakistan .60 subjects of NSNP were selected using purposive sampling and then devidid into two equal groups of 30 participants in each group. Group A was provided with conventional treatment and kaltern born technique while group B was with conventional and Mulligan technique. NDI was measure before and after two week of treatment. In this study the mean age of patients was 34.50 ± 9.78 years with minimum and maximum ages 21 years and 55 years. There was no statistical difference in both treatment group on pre evaluation, p-value > 0.05. Using Wilcoxen sign rank test and Mann whitney U test it was analyse that Mulligan and Keltenborn technique gave significant reduction in disability score but Mulligan's treatment was more effective, p-value < 0.001.*

Keywords: Nonspecific neck pain, Haqorthopedic hospital, Kaltenborn, Mulligan, NDI.

1. Introduction

1.1 Overview

Neck pain is the common and discomforting musculoskeletal problem. In most of the cases the pathological basis for neck pain is unclear or unknown so the complaints are given the title as 'non-specific' or 'mechanical [1]Neck pain cause disability, limits and restrict the person to take part actively in ADL [2]. The causes of neck pain are inflammatory or degenerative processes, trauma, tumor or systemic conditions, while in most patients neck pain is not due to a serious disease or pathology, but may be due to bad posture or some mechanical reason, It is known as simple or nonspecific neck pain [3]Nonspecific neck pain go away within 3-6 months, but can persists even longer in 14% of patients and leads toward chronic neck pain. pathogenesis of non-specific neck pain is not completely clear, physiological and psychological factors such as stress, poor mental Health. Prolong desk work, work overload and postural deficits may contribute to mechanical neck[4]

Risk factors for nonspecific neck pain are age, previous musculoskeletal pain, gender, occupation, headaches, emotional problems, smoking, poor job satisfaction, awkward work postures, poor physical work environment, low physical capacity [5]
Evidence shows that cervical manipulation is much safer and most effective for nonspecific neck pain treatment hundred times more than of non-steroidal anti-inflammatory

(NSAID) because they have more risks of serious complications leaging to death[6]

Physiotherapists make special exercise program by using Mckenzie approach and stabilization exercises, passive treatment like manual therapy much effective is provided by the therapist's hand also includes massag.Physical modalities as Traction, TENS, Heat/cold Laser, Ultra-sound, Short waves, Interferential, Corsets and Collars. Are also in use but the most effective treatment is manual treatment [7]

First instrument used to check self-rated problems in neck patients was Neck disability index, is the questionnaire used for the scoring of neck pain so it is the most valid tool all over the world for measuring neck pain it's purposeful for both clinical and research. It's a modified form of Oswestry for the scoring of low back pain, scoring can be done as raw score [8] NDI is a 10 item questionnaire each item contain 0-5 scale option.Scale "0" means no pain while scale "5" means severe unbearing pain. Higher score indicate more pain or discomfort.NDI has sensitivity of 0.78 and a specificity of 0.80.

From available studies incidence of neck pain ranges between 10.4% and 21.3% with a higher rate in office and computer workers. The overall prevalence of neck pain in 1 year ranges from 4.8% to 79.5% (mean: 25.8%). Prevalence is generally higher in women and in high-income countries [9]

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1.2 Objectives

To compare the change on neck disability index by comparing Mulligan manual therapy techniques with kaltenborn manual therapy techniques for the treatment of nonspecific neck pain.

1.3 Rationale

The purpose of this study is to find out an effective treatment to decrease disability associated with nonspecific neck pain and improving functional independence which ultimately improve quality of both life and work.

1.4 Operational Definitions

1.4.1 Nonspecific neck pain
Nonspecific neck pain is a condition without any specific pathology causing neck pain and decreases range of motion [10]

1.4.2 Neck disability index
The Neck Disability Index (NDI) is a pain measurement tool that is used for neck pain patients with high "test-retest" reliability. It is more valid and reliable then other pain and disability measuring tools. (Moffett and McLean, 2006).

1.4.3 Mulligan manual therapy techniques
"New Zealand born physical therapist Brian Mulligan introduced the concept of mobilization with movement in which translatory forces are applied to the joints during active movements with the goal of alleviating pain during movement"

1.4.4 Kaltenborn manual therapy technique
Kaltenborn suggested limitations in range of motion were associated with stereotypical deficits in translatory movement of the joint surfaces based upon their shape (convex–concave rule). Restoration of joint surface translation through the application of manual therapy forces was surmised to result in improved range of motion and other favorable clinical outcomes"

1.5 Materials and methods

1.5.1 Study Design
The present study is a Qausi-Experimental.

1.5.2 Setting
The study was conducted in HAQ ORTHOPEDIC HOSPITAL LAHORE.

1.5.3 Study Population
Male and Female patient of Haq orthopedic hospital Lahore.

1.5.4 Duration of Study
The study took 4 months from November 2013 to February 2014 after approval from advance research committee

1.5.5 Sample size
The sample size is 60.

1.5.6 Eligibility
1.5.6.1 Inclusion Criteria
- Patients with non specific neck pain
- Male and female patient both
- Age 20-55

1.5.6.2 Exclusion Criteria
- Post-operative pain
- Trauma
- Malignancy
- Vertebrobasilar artery insufficiency
- Cervical disc syndrome

1.5.7 Data Collection
After taking concent from head of hospital and written concent from patient,Qausi experimental study was conducted at Haq orthopedic hospital Lahore for the duration of four months from NOV to FEB.60 subjects of NSNP were selected in four month duration using purposive sampling and then dividid into two groups of 30 participants in each group. Group A was with Kaltenborn technique, neck isometrics and shortwave diathermy while group B was with Mulligan technique, neck isometrics and shortwave diathermy. Neck disability index was used for pre and post treatment scoring. The variables measured by NDI were pain intensity, personal care, lifting, reading, headache, concentration, work, driving, sleeping, recreation. Pretreatment measurement were taken and recorded on NDI then with duration of two week the both groups were given their respective treatment in two sittings per week for one hour then post treatment scoring was done and change was checked by comparing pre and post scores of each group on NDI and difference between two techniques by comparing their post treatment score. Wilcoxen rank test and Mann Whitney U test were used to compare the change on NDI for both technique. The results were explained in the form of tables and graphs.

1.5.8 Ethical Consideration
The ethical committee and Department of physiotherapy of Haq Orthopedic approved to conduct the study in hospital. Only those patients were included in the study who signed the written consent. All the personal information of participants were kept hidden.

1.5.9 Statistical Procedure
The data was analyzed by Statistical Pack¬age for Social Sciences (SPSS) version 20 as Descriptive statistical analysis. The difference between pre and post treatment was measured by Wilcoxon signed rank test because my data was not normally distributed and comparison between two treatments groups was measured by Mann Whitney u-test. Significance level was 0.05.Confidence interval 95%The data was presented in the form of tables and graphs.).

2. Results

2.1 Statistics of age

Table 1: Descriptive statistics of age (years)

	Age- years
Mean	34.5
Std. Deviation	9.78
Range	34
Minimum	21
Maximum	55

In this study the mean age of patients was 34.50 ± 9.78 years with minimum and maximum ages 21 years and 55 years.

Table 2: Comparison of Pre - Neck Disability Index in Both Study Groups

		Study Groups		Total	p-value
		Mulligan's	KeltenBorn		
Pre Treatment	Mild Disability	0	1	1	**0.451**
	Moderate Disability	5	2	7	
	Sever Disability	13	16	29	
	Completely Disabled	12	11	23	

Before treatment, in Mulligan's group 5 patients presented with moderate disability, 13 with sever and 12 with complete disability while in Keltenborn treatment group 1 patient presented with mild, 2 with moderate , 16 patients with severe and 11 patients presented with complete disability. There was no statistical difference in both treatment group on pre evaluation, p-value > 0.05.

2.3 Comparison of Post-Neck Disability Index

Table 3: Comparison of Post-Neck Disability Index in Both Study Groups

		Study Groups		Total	p-value
		Mulligan's	KeltenBorn		
Post Treatment	No disability	5	1	6	0.007
	Mild Disability	18	8	26	
	Moderate Disability	5	11	16	
	Sever Disability	2	9	11	
	Completely Disabled	0	1	1	

After treatment, in Mulligan's group 5 patients recovered with no disability, 18 had mild, 5 had moderate and 2 patients had sever disability while in Keltenborn group 1 patient had no disability 8 had mild, 11 had moderate, 9 had sever disability and 1 patients was still completely disabled. Post treatment, disability was statistically more reduced in Mulligan's group as compare to Keltenborn treatment group, p-value < 0.05.

2.4 Comparison Of Neck Disability Index –Pre And Post Treatment

Table 4: Comparison of Neck Disability Index – Pre and Post Treatment in Both Study Groups

	Mulligan's		Kelten Born	
	Pre	Post	Pre	Post
No disability	0	5	0	1
Mild Disability	0	18	1	8
Moderate Disability	5	5	2	11
Sever Disability	13	2	16	9
Completely Disabled	12	0	11	1
p-value (Wilcoxen test)	*0*		*0*	

Using Wilcoxen test it was also seen that Mulligan and Keltenborn test gave significant reduction in disability score but Mulligan's treatment was more effective, p-value < 0.001

2.5 Comparison of Change in Neck Disability Index

Table 5: Descriptive And Comparison of Change in Neck Disability Index After Treatment in Both Study Groups

	Mulligan's	Kelten Born
Median	24.49	12
I.Q.R	13	4
p-value (Mann Whitney U test)	0	

Using Mann Whitney U test, it was also analyzed that Mulligan gave better results as compare to Keltenborn treatment, p-value < 0.001.

3. Conclusion

In this study the mean age of patients was 34.50 ± 9.78 years with minimum and maximum ages 21 years and 55 years. The result of this study suggests that both Kaltenborn and Mulligan manual therapy techniques are effective for the treatment of nonspecific neck pain. After treatment on comparison the disability on NDI for pain intensity, personal care, lifting, reading, headache, concentration, work, driving, sleeping, recreation for each technique was statistically reduced for both groups but there was distinct reduction of disability for Mulligan than Kaltenborn concluded that Mulligan technique is better than Kaltenborn technique

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Author Profile

Riffat Nazeer Ahmad is Senior Physiotherapist, Haq Orthopedic Hospital 18 Sanda, Road, Lahore

Hafiz Muhammad Asim is Associate Professor, Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore

Rashid Hafeez Nasir is Assistant Professor, Ripha College of Rehabilitation Sciences, Ripha International University Lahore Campus Township, Lahore

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