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Research Article

COMPARATIVE STUDY ON THE EFFECTIVENESS OF MULLIGAN SUSTAINED NATURAL APOPHYSEAL GLIDES (SNAGs) VS MULLIGAN NATURAL APOPHYSEAL GLIDES (NAGs) IN PATIENTS WITH MECHANICAL NECK PAIN

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Abstract:

Background: Mechanical neck pain is soreness that rises from the posterior element of the cranium and travels toward the decrease cervical spine and shoulders. In this discomfort, vertebral arrangements are disturbed and the joints of the cervical spine and ribs fail to perform the correct biomechanical movements resulting in reduced mobility, which creates pain. In this study, Mulligan sustained natural apophyseal glides (SNAGs) and natural apophyseal glides (NAGs) will be applied in mechanical neck pain subjects to reduce the immobility and relieve pain.

Aims & Objectives: The main objective of the research is to compare the effectiveness of Mulligan SNAGs and NAGs in reducing immobility and relieving pain in patients suffering from mechanical neck pain.

Methodology: A randomized clinical trial with simple random sampling by random number table was conducted. A sample size of 50 (n=50) subjects was taken from physiotherapy department of Madinah Teaching Hospital, who fulfilled the selection criteria and was distributed into two equal groups of (A-B) twenty-five (25) each. The researcher signed a prior informed consent from all participants before any inspection or examination. The base line treatment is same for both groups, which is the range of motion, strengthening exercises and group A will receive Mulligan SNAGs while group B will receive Mulligan NAGs. Treatment frequency was three times per week for two weeks. Subjects were assessed at the start of the management and at the completion of second week.

Whole data was collected using Wong-Baker faces pain scale (WBFPS) and Neck disability index (NDI) to assess change in pain intensity and data was analyzed by SPSS version 20.

Results: Pain intensity after treatment with SNAGs ($df = 48, p < 0.05$). Pain intensity with NAGs has ($df = 48, p < 0.05$). Pain intensity after treatment with SNAGs was lower (Mean=3.16) than after NAGs treatment (Mean=3.36) this proves that Mulligan's SNAGs is more effective in case of mechanical neck pain than Mulligan's NAGs.

Conclusion: The study concluded that Mulligan's SNAGs are more effective than in comparison to Mulligan's NAGs but at some point, both techniques gave significant results.

Keywords: Sustained Natural Apophyseal Glides (SNAGs), Natural Apophyseal Glides (NAGs) Wong-Baker faces pain scale (WBFPS), NDI, Neck strengthening exercises, RCT

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INTRODUCTION:

The term Mechanical neck Pain (MNP) demonstrates such an upsetting condition of affliction that rises out of the back area of the skull and goes towards the lower cervical spine and shoulders. In this distress, vertebral alignments are upset and the joints of the cervical spine and ribs neglect to play out the best possible bio-mechanical developments bringing about diminished portability, which causes severe pain. ^[1]

The frequency of neck pain in the general population of the USA is 20-30% due to faulty postures and work-related bad biomechanics. ^[2] It is suggested that forward head posture leads to an increase in the compressive forces on the cervical apophyseal joints and posterior part of the vertebra and to changes in connective tissue length and quality (in light of extending of the foremost structures of the neck and shortening of the back muscles) bringing about pain. ^[3]

Neck pain is a common source of disability in the general population. Around 67% of adults will have neck pain sometimes during their life time. Reasons for neck pain are mostly caused because of sprain or strain in the muscles and delicate tissues of the neck. Mechanical neck pain is likely because of minor strains and hyper-extends and is frequently connected with poor biomechanics.

Mechanical neck pain can be described as the pain that has been available for under 3 months. It doesn't describe the seriousness or nature of pain. A few investigations have demonstrated that changed muscle actuation and decreased neck muscle quality is a notable element of neck pain, which presents with expanded degrees of disability. The etiology of mechanical neck pain is ineffectively comprehended and generally multifactorial, including bad biomechanical stance, anxiety, uneasiness, neck strain, and work-related or exercises.

By executing a couple of self-improvement strategies, might have the option to decrease neck pain, improve portability in cervical spine and forestall the advancement of certain neck issues. A few specialists express that any occasion or condition (for example wrong stance, aging, and intense injury, intrinsic or formative imperfections) which prompts modified joint mechanics or muscle structure or capacity, can bring about mechanical neck pain.

Several treatment options have yet been formulated by many researchers who have come up with contrasting conclusions. An RCT was performed to compare the effectiveness of McKenzie treatment versus mulligan

sustained natural apophyseal glides (SNAGs) for chronic mechanical low back pain. This RCT inferred that Mulligan SNAGs improved lumbar ROM more viably than McKenzie EEP every which way including flexion, expansion, side twisting and pivot. ^[4]

Another research was conducted to observe the effects of the Mulligan Mobilization technique in case of mechanical neck pain. The result of this examination demonstrated Mulligan Mobilization treatment program effectively affects pain, the scope of movement, muscle quality, execution level, disability, burdensome manifestations, and nature of life in participants with mechanical neck pain. ^[5]

Another assessment was done to watch the effects of Comparison of Sustained Natural Apophyseal Glides and Maitland Manual Therapy in Non-Specific Neck Pain on Numeric Pain Rating Scale and Neck. The results concluded that Sustained Natural Apophyseal Glides (SNAGs) mobilization was more effective in the management of non-specific neck pain and conventional treatment improved functional status of the neck than Maitland mobilization. ^[6]

While depicting the reasons for mechanical neck pain (MNP), the over the top mechanical worries with helpless ergonomics, anxiety, trouble, and some dangerous games or relaxation exercises was seen. The clinical signs and symptoms of neck discomfort include muscular spasm, feelings of faintness, and generalized pain in the cervical region, shoulders, and arms which leads towards the restriction of mobility.

The treatment protocols which are used for MNP are painkillers, muscle relaxants anti-inflammatory drugs, muscle relaxation training (YOGA), manipulation techniques, dry needling and physical therapeutic interventions like muscle energy techniques, stretching and muscle building exercises with physical training and posture correction. ^[7]

In 2016, S, I Hussain et al concluded that NAGS are more effective than Maitland grade I & II mobilizations. ^[1] In 2014, Abid A. et al concluded that the combination of SNAGS and isometric exercises is more beneficial than isometric exercises alone for subjects of mechanical neck pain in terms of pain decreasing and improving their lifestyle. ^[8]

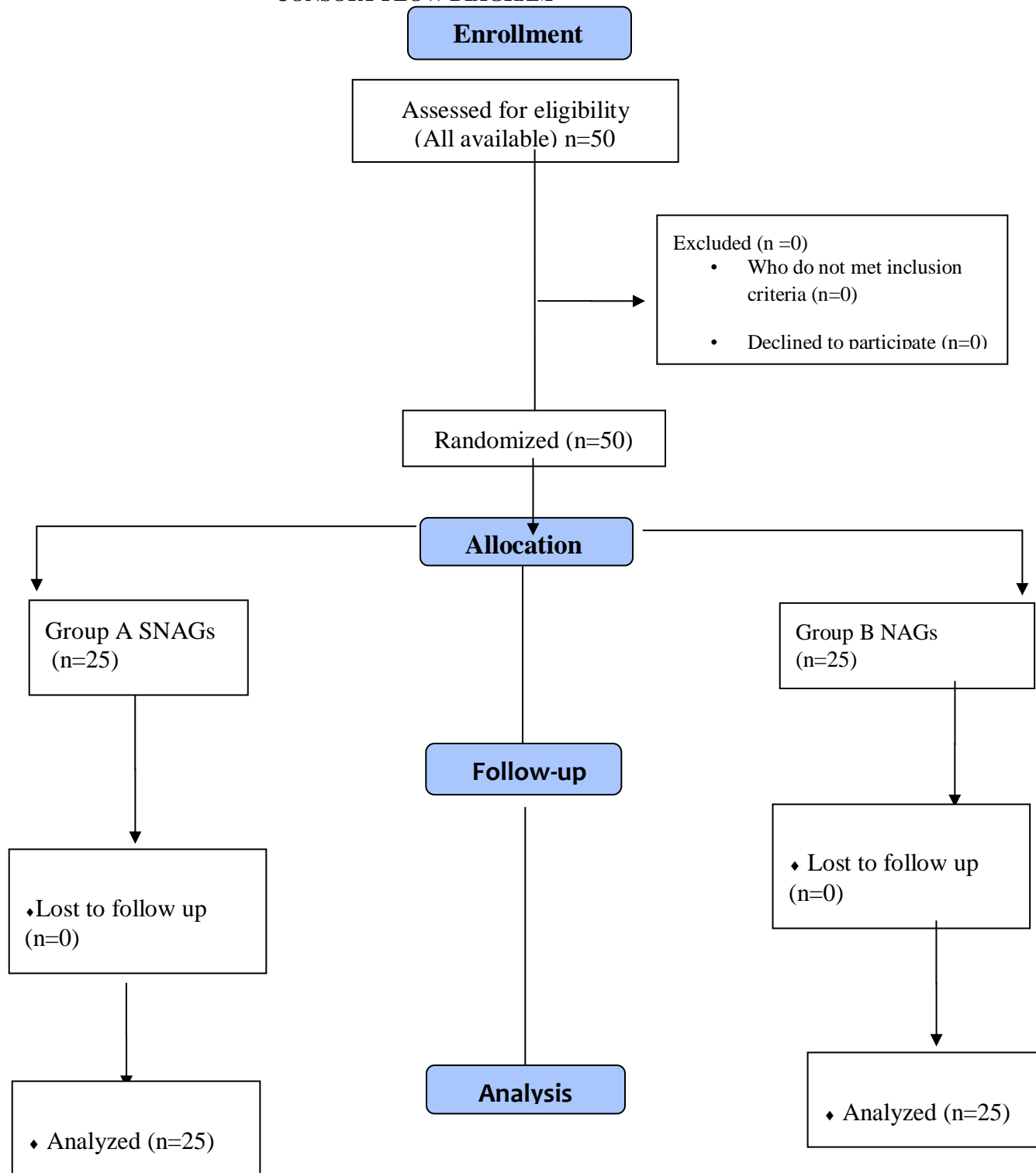
Another study concluded that Mulligan concept techniques improve symptoms of pain and disability in chronic mechanical neck pain patients in short and mid-term effect levels. ^[9]

A systematic review was done to check the effectiveness of mobilization with movement (Mulligan concept techniques) on low back pain. The

outcomes demonstrated that Mulligan methods can diminish pain and disability and enhances the range of movement in patients with low back pain. ^[10]

MATERIALS AND METHODS:

CONSORT FLOW DIAGRAM



Study Design:

- A quantitative study will be conducted by following a research design of randomized control design (RCT).
- Two groups from the selected sample will be formed named A, B. Group A being the Mulligan SNAGs group, Group B being the Mulligan NAGs group.
- Treatment groups will follow the intervention plan.

Study Settings

All clients will be chosen from different hospitals of Faisalabad and the general community.

- Madinah Teaching Hospital
- Private Clinics

Duration:

Data collection & Analysis of research had been completed for this study in 4 months.

Sampling technique:

Non-probability purposive sampling technique was used to collect samples. Participation in the research project was voluntary. Subjects were screened for recruitment in research. Only the individuals who met the inclusion criteria were enrolled in the study. Each client gave their informed consent for participation in research. Clients were randomly allocated to treatment and control groups through concealed allocation by using an online randomization generator.

Sample size:

The sample size for each group was 25 which makes total of 50 participants.

Inclusion criteria:

Age 18–50 years
Current neck pain
Neck pain continued for at least last 3 weeks

Exclusion criteria:

Irradiated neck pain
Neck pain associated with vertigo
Osteoporosis

- Psychological disorders
- Vertebral fractures
- Metabolic diseases
- Previous neck surgery
- Red flags (Night pain, severe muscle spasm, loss of involuntary weight, symptom mismatch)
- Physiotherapeutic treatment continued in the last 3 months.

Data collection Procedure

The researchers collected the data by interviewing the patients and filling a structured questionnaire. These questionnaires were rechecked by the researchers to ensure that the data is properly filled. The obtained data entered into the SPSS software version 20.

Data collection tools

- Following outcome measures were used to gather data from selected participants:
- Primary outcome measure:
- WBFPS (to measure pain)
- Secondary outcome measure:
- NDI (to assess change in pain)

RESULTS:

To find out the comparative difference of variables having quantitative nature was measured by applying Independent Sample T test & P-value ≤ 0.05 was considered as significant. The results from data and statistical analysis by using t-test, SPSS obtained by using WBFPS & NDI are given in terms of mean and P-value in both groups. Pain before treatment was higher (Mean=5.88) (Mean =37.68) than after the treatment (Mean=3.16) (Mean = 30.20). The calculated “t” value was -1.184 and degree of freedom was 48. Pain intensity after treatment with SNAGs (df = 48, $p < 0.05$). Pain intensity with NAGs has (df = 48, $p < 0.05$). Pain intensity after treatment with SNAGs was lower (Mean=3.16) than after NAGs treatment (Mean=3.36) this proves that Mulligan’s SNAGs is more effective in case of mechanical neck pain than Mulligan’s NAGs.

Table 1

Group Statistics					
	Groups	N	Mean	Std. Deviation	Std. Error Mean
WBFPS.Before.Rx	A	25	5.88	1.269	.254
	B	25	5.96	1.098	.220
WBFPS.After.Rx	A	25	3.16	.688	.138
	B	25	3.36	.490	.098
NDI.Before.Rx	A	25	37.68	3.250	.650
	B	25	38.08	4.132	.826
NDI.After.Rx	A	25	30.20	3.291	.658
	B	25	30.20	3.958	.792

* = Significant (P<0.05); ** = highly significant (P<0.01), SD = Standard deviation

Table 2

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
WBFPS.Before.Rx	Equal variances assumed	.746	.392	-.238	48	.813	-.080	.336	-.755	.595
	Equal variances not assumed			-.238	47.036	.813	-.080	.336	-.755	.595
WBFPS.After.Rx	Equal variances assumed	.772	.384	-1.184	48	.242	-.200	.169	-.540	.140
	Equal variances not assumed			-1.184	43.361	.243	-.200	.169	-.541	.141
NDI.Before.Rx	Equal variances assumed	.634	.430	-.380	48	.705	-.400	1.051	-2.514	1.714
	Equal variances not assumed			-.380	45.472	.705	-.400	1.051	-2.517	1.717
NDI.After.Rx	Equal variances assumed	.521	.474	.000	48	1.000	.000	1.030	-2.070	2.070
	Equal variances not assumed			.000	46.455	1.000	.000	1.030	-2.072	2.072

* = Significant (P<0.05); ** = highly significant (P<0.01), SD = Standard deviation

DISCUSSION:

This study was conducted to compare Mulligan's techniques SNAG's and NAG's among mechanical neck pain patients to determine which is more effective in the case of mechanical neck pain study aimed to evaluate which mulligan technique is more effective in case of mechanical neck pain.

The sample size consisted of 50 patients taken from different hospitals and private clinics of Faisalabad (Madinah Teaching Hospital). The distribution showed that the majority of the patients percent were in the range of 28 -37 yrs. Most of the patients were middle-aged and most of them and a few consisted of plus 40 years old. The complaint of occurrence of symptoms was common among the middle-aged

mostly around the age of 30-40 years.

Tanveer, F.et.al (2017) conducted a similar a Quasi-experimental study on non-specific neck pain and the effectiveness of Mulligan's Snags and Maitland's Manual therapy by the help of NPRS and NDI the study concluded that the Mulligan's Snags were more effective than in comparison to the Maitland's Manual therapy and showed better result in comparison to Maitland's Manual therapy and our results also showed the similar conclusion. ^[6]

In the line of our study Waqas, S., et.al. (2017) conducted an RCT study on mechanical neck pain and compared the effectiveness of Mulligan's Snags VS Mulligan's Nags by the help of NPRS and the study concluded that the Mulligan's Snags were more effective than in comparison to Mulligan's Nags in case of mechanical neck pain. ^[11]

In 2015 Hidalgo, B., et al demonstrated proof that lumbar spine SNAGs had a momentary ideal impact on pain and capacity in patients with vague low back pain. The pain reduction in both groups may be due to the mechanical effect of mobilization. ^[12]

Hence the study showed that both the Mulligan's Techniques are effective but Mulligan's SNAGs is more effective in the case of Mechanical Neck Pain than in comparison to Mulligan's NAGs.

CONCLUSION:

During this research it was concluded that the study showed that both the Mulligan's Techniques are effective but Mulligan's SNAGs is more effective in the case of Mechanical Neck Pain than in comparison to Mulligan's NAGs.

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