



Original Article

Short-Term Effects of Mulligan SNAGs Versus Soft Tissue Mobilization in Patients with Sub-Acute Non-Specific Low Back Pain

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ABSTRACT

Background: Low back pain is the most common health-related problem. Worldwide, one out of three people suffered from low back pain. Currently, the low back dispute is the most common grumble of the functioning age community. The use of mulligan sustained natural epiphyseal glides (SNAGs) as well as soft tissue mobilization is thought to reduce pain, increase range of motion and improve kinesiophobia level. **Objective:** This study was aimed at finding the short-term effects of Mulligan SNAGs versus Soft tissue mobilization on pain, range of motion and the kinesiophobia level. **Methods:** It was a quasi-experimental study conducted at Mumtaz Hospital, Muzaffargarh and Shan-e-Lateef Medical and Surgical Hospital Muzaffargarh from February 20, 2023, to June 30, 2023. Mulligan SNAGs were given in group A and soft tissue mobilization group in group B. The numeric pain rating scale, range of motion with goniometry and Tampa scale were used for the estimation of outcomes of the study. A total of five sessions were given to each group. Descriptive data was presented as frequency and percentages. Mann Whitney U test was applied. The p-value less or equal to 0.05 was taken as significant. **Results:** There were a total of 77 participants having sub-acute non-specific low back pain. The mean age of participants was 40.81 ± 39.38 in Mulligan SNAGs and soft tissue mobilization groups respectively. Pain reduction (NPRS mean value after treatment 28.05 and 32.67, increased range of motion (lumbar flexion mean value 50.75 and 42.55), lumbar extension 58.10 and 52.33 and improved kinesiophobia level (Tampa mean value 30.66 and 34.16) respectively in Mulligan SNAGs group and soft tissue mobilization group. Mulligan SNAGs with a p-value of 0.001 showed more significance as compared to the soft tissue mobilization group with a p-value of 0.01. **Conclusion:** Both Mulligan SNAGs and soft tissue mobilization presented with a reduction of pain, increased range of motion and reduction of kinesiophobia level but more significant effects were in Mulligan SNAGs as compared to soft tissue mobilization.

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INTRODUCTION

The low back issue is the umbrella of disorders. More than eight developing individuals were assessed to suffering from low back pain ultimately throughout their life. More than seventy percent of appointment in private physiotherapy centers is a consequence of lower back issue. It is an extreme degree of expense disorder for patients and the government.¹ The event of low back torment differs from one country to another. In the Iranian population, the low back disorder is more than 18% in the understudies community, more than 70% of caretaking persons and a greater number of pregnant women are affected.² It is an essential event that causes trouble in activity, and participation restriction and is highly expensive for families, networks, businesses and the government. Different techniques and procedures are used to make the difference between non-spinal or serious spinal disorders and those affected by musculoskeletal insults using history and examination with an absolute emphasis on red flags and yellow flags.³ Large components are causing currently low back insults. These elements come from over and repetitive load to normal spinal constructions and alignment.⁴

A lot of repetitive stress is transferred to the spine by postural changing, body mechanics, and trunk strength, just as adjustability in incorporation to the strength of muscles of the pelvic region and lower limits.⁵ Usually, active stretches and worked with extending posture training exercise protocols are given to correct the thoracic curve as a standard treatment. Commonly, the start of lower back pain is injury or exhaustion of muscles, tendons, facet joints and Sacroiliac joints insults. More than 85% of cases of lower back issues presented in physiotherapy clinics with no definite origin of pain which is grouped as non-specific low back pain. Treatment procedures for specific and non-specific low back pain are different such as spinal surgery, oral medication, injection at the

back region, psychotherapy, chiropractic, physiotherapy, occupational therapy and so on.⁶ Mechanical low back pain is a specific term used to signify a disorder that doesn't have a specific reason or that is not associated with any serious spinal pathology.⁷ As we know low back disorders are great in number. For effective treatment of low back pain, the first is to make the right neurological findings necessary. Most cases have been seen in clinical settings of persistent back pain in their developing stage.⁸ Mobilization with movement is another manual therapy treatment practiced by Robert Mulligan for lower back pain, since patients move their body segment during implementation of the mobilization with movement manners by a physiotherapist. When it acts on the spinal vertebra, the procedure is called sustained natural apophyseal glide.⁹ The sustained natural apophyseal glide requires the use of accessory passive glides to lumbar vertebrae by the practitioner while the patient will synchronously perform mobilization with movement.¹⁰ Glides provided are in the guidance of orientation of feature joints and techniques generally work in weight-bearing positions like standing, and sitting.¹¹ Myofascial release is remembered to change the disturbance fit cycle through the presynaptic inhibition of nociceptive receptors in related plans and the restriction of hypertonic muscles, which over the long run upgrade experimental limits.¹²

Mulligan estimated that restricted feature joint gliding in flexion could increase torture acceptable from the distortion of the central nucleus pulpous. In any case, the strategies of particular planning/control of the spine to treat tortures are consistently used, practiced and suggested in treatment.¹³ The objective of the study was to compare the effectiveness of both the Mulligan sustained natural apophyseal glides (SNAGs) group and the soft tissue mobilization group for non-specific lumbar

pain, both techniques were more effective but Mulligan SNAGs showed significant results than soft tissue mobilization in decreasing the pain level, enhancing lumbar range of motion (flexion and extension) and improve kinesiophobia in non-specific low back pain patients.¹⁴

METHOD

This was a quasi-experimental study conducted at Mumtaz Hospital, Muzaffargarh & Shan-e-Lateef Medical and Surgical Hospital Muzaffargarh from February to June 2023. A total of 77 participants having sub-acute non-specific low back pain were selected with ages ranging from 28 to 50 years.⁹ Lumbar range of motion (minimum extension of lumbar is $14 \pm 4^{\circ}$ ¹⁰ and minimum flexion of lumbar is $37 \pm 12^{\circ}$.¹¹ According to numeric pain rating scale (NPRS) moderate to severe level according to score.¹ After obtaining a permission letter from TIMES Institute, Multan and a consent form from the participant, the study was conducted at Mumtaz Hospital in Muzaffargarh. Exclusion criteria included lumbar radiculopathy, any history of trauma, fracture and congenital diseases, etc. The NPRS and Tampa scale questionnaires were filled according to study protocol following ethical approval. Patients were divided into two groups A (n=38) and B (n=39). Five sessions were given to each participant and four times questionnaires were filled. A hot pack for 10 or 15 minutes was used in both groups. Group A (Mulligan SNAG): Participants of group A received the 3 sessions in the 1st week on an alternative day and 2 sessions 2nd week on every 3rd day with 2 to 3 sets varying according to patient pain level with 10 repetitions in each set for 10 minutes. Group B (soft tissue mobilization): Participants of group B received three sessions per week on an alternative day in 1st week and every 3rd day of 2nd week for 20 minutes. The equipment used in this study was a Mulligan belt for SNAGs, a goniometer for measuring lumbar ROM and instrument-assisted soft tissue

mobilization (IASTM) tools for soft tissue mobilization. Analysis of data was done by SPSS v.25. Descriptive data was presented as frequency and percentages. Mann Whitney U test was applied. Thp-value less or equal to 0.05 was taken as significant.

RESULTS

In Group A, n=38, 49.32% and in Group B n=39, 51.68% of total data. P-value less than 0.05 for Mann Whitney U test which means we accepted HA which is the data is not normal. We applied a non-parametric test. There was significantly reduced pain on the NPRS scale but mulligan SNAG group A showed better results than soft tissue mobilization group B. The mean value of both treatments improved lumbar flexion but mulligan SNAG group A showed better results than soft tissue mobilization group B (Table 1). The mean value of both treatments (Table 2) according to the mean value of both treatments significantly reduced kinesiophobia level on the Tampa scale but Mulligan SNAG group A showed better results than soft tissue mobilization group B. The mean value of both treatments improved lumbar extension but mulligan SNAG group A showed better results than soft tissue mobilization group B (Table 3).

DISCUSSION

This quasi-experimental study was designed to investigate the short-term effects of Mulligan snags versus soft tissue mobilization technique for improving pain, range of motion and kinesiophobia in non-specific low back pain patients. A total of 77 subjects participated in this trial. These participants were allocated into Group A and Group B. Group A was treated by Mulligan SNAGs while Group B received soft tissue mobilization. The outcome of this study reveals that both treatments are positive for improving lumbar flexion but Mulligan SNAGs are more effective in reducing pain and increasing range of motion. Many clinical trials have been conducted by different researchers

Table 1: NPRS Comparison of Both Groups

| | Groups | n | Mean Rank | Sum of Ranks |
|----------------|-----------------------------|----|-----------|--------------|
| Pre-treatment | Mulligan SNAG (A) | 38 | 39.74 | 1510.00 |
| | Soft tissue mobilization(B) | 39 | 38.28 | 1493.00 |
| Post-treatment | Mulligan SNAG | 38 | 28.05 | 1066.00 |
| | Soft tissue mobilization | 39 | 32.67 | 1237.00 |

Table 2: TAMPa Comparison of Both Groups

| | Groups | n | Mean Rank | Sum of Ranks |
|----------------|------------------------------|----|-----------|--------------|
| Pre-treatment | Mulligan SNAG (A) | 38 | 37.88 | 1439.50 |
| | Soft tissue mobilization (B) | 39 | 40.09 | 1563.50 |
| Post-treatment | Mulligan SNAG (A) | 38 | 30.66 | 1165.00 |
| | Soft tissue mobilization (B) | 39 | 34.13 | 1338.00 |

Table 3: Lumbar Flexion Comparison of Both Groups

| Outcomes | Ranks | | | | |
|------------------|----------------|------------------------------|----|-----------|--------------|
| | | Groups | n | Mean Rank | Sum of Ranks |
| Lumbar Flexion | Pre-treatment | Mulligan SNAG (A) | 38 | 38.86 | 1476.50 |
| | | Soft tissue mobilization (B) | 39 | 39.14 | 1526.50 |
| | Post-treatment | Mulligan SNAG | 38 | 50.75 | 1928.50 |
| | | Soft tissue mobilization (B) | 39 | 42.55 | 1774.50 |
| Lumbar Extension | Pre-treatment | Mulligan SNAG (A) | 38 | 40.29 | 1531.00 |
| | | Soft tissue mobilization (B) | 39 | 37.74 | 1472.00 |
| | Post-treatment | Mulligan SNAG (A) | 38 | 58.16 | 2210.00 |
| | | Soft tissue mobilization (B) | 39 | 52.33 | 1993.00 |

to investigate the effects of Mulligan SNAGs and soft tissue mobilization on non-specific low back pain. The majority of the studies supported the use of mulligan SNAGs for short-term treatment of non-specific low back pain.¹⁵ A randomized placebo-controlled experiment was conducted by Hussein and Morsiin 2021 to evaluate the prompt effect of mulligan SNAGs on pain and postural stability among patients suffering from flexion commanding low back pain. Two groups were created with a total of 64 participants.¹⁶ One group was treated with SNAGs at the central lumbar and the other group received sham treatment. Outcome measures were computed both before and instantly after interventions were given.¹⁷

Findings of this trial indicate that the group treated by SNAGs manifested expeditious recovery in pain and postural stability occurring from flexion commanding low back pain.¹⁸ A current study also demonstrates that the Mulligan SNAGs technique is greatly beneficial in alleviating pain and improving lumbar range of motion in low back pain patients.⁶ The findings of Khan S. in 2018 stated that Maitland's and SNAGs both reduce the symptoms and signs of persistent low back pain. This technique demonstrated greater improvement than Maitland's group. Based on these findings, SNAGs with exercise should be preferred to Maitland's with exercise as a remedy for chronic low back pain¹⁶. As our study showed that Mulligan SNAGs are more effective, this study also demonstrates that Mulligan snag causes more improvement in pain and disability when compared with Maitland.⁵ Manzoor, Arshad for the treatment of non-specific low back pain, a study was conducted by Taqdees in Pakistan to compare the consequences of Grade 1 and 2 Maitland technique and Mulligan SNAG mobilization. 40 subjects were recruited and classified into 2 groups. Members from group A were entertained with Mulligan SNAGs

mobilization whereas group B members received Maitland Grade 1 and 2, reported that Mulligan sustained natural apophyseal glides have more promising outcomes in alleviating pain and improving the functionality of the spine as compared to the Maitland approach. In similarity with the outcomes of this study current trial also advocates the favourable effects of mulligan sustained natural apophyseal glides in the management of indefinite low back pain and intensifying lumbar range of motion.¹⁹

Patel B. executed a parallel-group study to illustrate the effects of mulligan sustained natural apophyseal glide and myofascial release for the treatment of low back pain and lumbar range of motion. About 65 patients suffering from moderate and chronic low back pain were categorized into two groups. For one week both groups received strengthening exercises accompanied by sustained natural apophyseal glide and myofascial release, making a total of six settings.²⁰ The study concluded that participants of both groups showed improvement related to pain and restricted lumbar function. However, the lumbar range of motion was remarkably improved with mulligan sustained natural apophyseal glide in comparison with myofascial release.¹⁴ The current study also evaluates the short-term outcomes of mulligan SNAGs and soft tissue mobilization on the management of indefinite low back pain. Results also support the fact that mulligan SNAGs have more advantageous effects on alleviating pain, and disability and improving lumbar range of motion.¹ Most of the evidence extracted from the last five years falls in support of the outcome of this trial. This validates that mulligan sustained natural apophyseal glide is efficacious in alleviating pain, improving lumbar range of motion and revamping kinesiphobia among patients encountering non-specific low back pain.

CONCLUSION

Given the demonstrated effectiveness of both Mulligan SNAGs and soft tissue mobilization for lumbar pain in musculoskeletal issues, both techniques were most effective but Mulligan SNAGs was showing the best results than soft tissue mobilization on pain level, lumbar range of motion and kinesiophobia in non-specific low back pain patients.

DECLARATIONS

Consent to participate: Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

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Authors' contributions: All authors read and approved the final manuscript.

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