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Effect Of Bowen Technique On Hamstring Flexibility In Subjects With Non-Specific Chronic Low Back Pain

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ABSTRACT
Background: Non-Specific Chronic Low Back Pain (NSCLBP) is characterized by pain localized below the costal margin and above the inferior gluteal folds, lasting for over 12 weeks without identifiable pathology. Hamstring tightness is a significant contributing factor, as reduced flexibility alters pelvic and lumbar mechanics, increasing stress on the spine. The Bowen Technique, a soft tissue remedial therapy, is hypothesized to promote muscle relaxation and improve flexibility.
Study Design: A Randomized Control Trial
Aim: This study aims to assess the effect of the Bowen technique on hamstring flexibility among subjects with Non-specific Chronic low back pain.
Objective: The objective of this study is to find the effect of the Bowen Technique on hamstring flexibility in subjects with Non-specific Chronic Low Back Pain.
Participants: A total of 72 participants aged 18–60 years were recruited as per inclusion criteria and randomized into two groups: the experimental group and the control group.
Method: This experimental study included 72 participants with NSCLBP and reduced hamstring flexibility. Participants were divided into two groups, Experimental Group Received Bowen Technique treatment once a week for 4 weeks and Control Group Performed static hamstring stretches 5 days a week for 4 weeks. The outcomes were assessed using the Active Knee Extension (AKE) test for hamstring flexibility, the Visual Analog Scale (VAS) for pain, and the Oswestry Disability Index (ODI) for functional disability. Post-intervention measurements were recorded at 4 weeks and after a period of 3 weeks as follow-up.
Result: The results of a paired two-sample t-test were analysed to compare post-intervention outcomes with those measured during a 3-week follow-up for three clinical parameters: Active Knee Extension (AKE) in degrees, Visual Analog Scale (VAS) for pain, and Oswestry Disability Index (ODI) in percentages. For AKE, the mean values post-intervention (154.36°) and at follow-up (154.22°) were nearly identical, with variances slightly decreasing from 10.87 to 9.72. In terms of pain intensity measured by VAS, the mean decreased from 4.64 post-intervention to 4.44 at follow-up, indicating a small reduction in pain. For the ODI, mean values post-intervention (31.33%) and follow-up (31.39%) remained very close. The mean AKE increased from 149.47 pre-intervention to 154.36 post-intervention, showing improved hamstring flexibility in Non-specific Chronic Low Back Pain. The mean pain score decreased from 6.583 pre-intervention to 4.639 post-intervention, demonstrating significant pain reduction. The mean ODI score dropped from 35.778% pre-intervention to 31.333% post-intervention, indicating improved functional ability.
Conclusion: The Bowen Technique significantly improves hamstring flexibility, reduces pain, and enhances functional ability in individuals with NSCLBP. The findings suggest that the Bowen Technique is an effective, non-invasive therapeutic intervention for managing NSCLBP and should be considered as an alternative or adjunct to conventional treatment strategies.

Keywords: Non-specific chronic low back pain, hamstring flexibility, Bowen Technique, Active Knee Extension, Oswestry Disability Index.

INTRODUCTION:
Non-Specific Chronic Low Back pain (NSLBP) is presented as pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain not attributed to any recognizable, known specific pathology (e.g. infection, tumor, osteoporosis, ankylosing spondylitis, fracture, inflammatory process, radicular syndrome or cauda equine syndrome) [1]. Chronic low back pain is defined as back pain lasting more than 12 weeks [2]. It can result from alterations in normal biomechanics of the vertebral column and constitutes a major health problem. For 10 to 40% of individuals with low back pain, the pain becomes chronic and a significant burden on the health care systems. 85% of LBP cases become classified as non-specific meaning that a definitive diagnosis cannot be found. Nonspecific chronic low back pain (NSLBP) can have a debilitating effect on patient's lives, resulting in disability to carry out activities of daily living [3]. Several factors are responsible for the development of Low back pain. These include increased lumbar lordosis, reduced abdominal muscle length and strength, decreased back extensor muscle endurance, back extensor muscle flexibility, iliopsoas length, hamstring muscle flexibility, and body composition. Controversies exist regarding the association between various physical characteristics and the occurrence of Low back

pain. In the context of the International Classification of Functioning (ICF) model, environmental and individual factors affect the development of low back pain. Lifestyle is a factor that could affect an individual's health (WHO 2001). A sedentary lifestyle is associated with obesity as well as muscle shortening which is linked to chronic health problems [3]. Among all these factors, hamstring tightness was one of the leading causes of low back pain [2]. It is also predicted that a reduction in hamstring flexibility is one of the causes of the development of lower back pain.[4] Anatomically, hamstring muscles are the long and powerful group of muscles that originate from the inferior medial impression on the upper part of the ischial tuberosity and are inserted on the upper part of the posterior surface of the tibia. Due to that the hamstring tightness generates a posterior pelvic tilt and decreases lumbar lordosis, which results in lower back pain. Reduced extensibility of hamstring muscles also decreases pelvic mobility. This leads to biomechanical changes in the spine's pressure distribution, resulting in spinal disorders. Therefore, poor hamstring extensibility has been associated with thoracic kyphosis, spondylolysis, disc herniation, changes in lumbar pelvic rhythm, and low back pain [2] Interventions aimed at improving hamstring flexibility have shown promise in alleviating low back pain and enhancing physical function. Traditional static, dynamic, and myofascial release methods have been widely studied and implemented in clinical practice [3]. However, the potential benefits of the Bowen Technique in this area remain underexplored in the scientific literature. By examining the Bowen Technique's impact on hamstring flexibility, this study seeks to fill this gap and provide valuable insights for managing NSCLBP [4].

Bowen Technique is named after Tom Bowen (1916-1982), who created a form of bodywork in Geelong, Australia. It has been described as a soft tissue remedial therapy in which the therapist uses fingers and thumbs to apply pain-free, gentle rolling moves over muscles, ligaments, tendons and other connective tissues in specific parts of the body. Reports following treatment have included improvements in; pain, range of motion (ROM), edema, heart rate, and functional recovery [5]. Proponents of the Bowen Technique claim that these movements can induce a state of deep relaxation, reduce muscle tension, and enhance overall physical function [6]. The Bowen Technique's application is based on the principle that the body can heal itself when provided with the right stimuli. The gentle manipulations are believed to reset the autonomic nervous system, promoting muscle relaxation and reducing hypertonicity, often observed in chronic pain conditions [6]. Despite its growing popularity, scientific research validating the effectiveness of the Bowen Technique is limited. Most existing literature consists of anecdotal evidence, case studies, and small-scale observational studies, highlighting the need for more rigorous, high-quality research to establish the technique's efficacy and understand its mechanisms, particularly in the context of NSCLBP and hamstring flexibility. The Bowen Technique is hypothesized to work through several mechanisms that align with therapeutic goals for managing NSCLBP. One primary mechanism proposed is the stimulation of mechanoreceptors and proprioceptors in the muscles and fascia, leading to neuromuscular re-patterning and improved muscle function [8]. These gentle manipulations are believed to reset the autonomic nervous system, promoting muscle relaxation and reducing the hypertonicity often seen in chronic pain conditions [6]. Additionally, the Bowen Technique's emphasis on gentle, non-invasive movements is thought to elicit a parasympathetic response, facilitating relaxation and stress reduction [7].

Chronic pain is often associated with heightened stress and sympathetic nervous system activity, which can perpetuate muscle tension and pain [7]. The Bowen Technique may help break this cycle by promoting a state of relaxation, contributing to pain relief and improved flexibility. The proposed mechanisms of action for the Bowen Technique also include improved circulation and lymphatic drainage, which can enhance the removal of metabolic waste products and reduce inflammation [6]. These effects could potentially lead to a reduction in pain and an improvement in overall physical function. The current body of research on the Bowen Technique is sparse and largely anecdotal. A systematic review by Clinton (2013) highlighted the need for more rigorous studies to establish the technique's efficacy and clarify its mechanisms of action. Most existing studies are limited by small sample sizes, lack of control groups, and methodological weaknesses, making it difficult to draw definitive conclusions about the Bowen Technique's effectiveness. (8)

Some preliminary studies and case reports suggest positive outcomes for pain reduction and functional improvement in various musculoskeletal conditions, including NSCLBP [7]. For instance, a case study by Rogers (2014) reported significant pain relief and increased range of motion in a patient with chronic low back pain following Bowen Technique sessions. However, these findings are not universally consistent, and high-quality research specifically focusing on the impact of the Bowen Technique on hamstring flexibility in NSCLBP patients is notably lacking (9).

This study aims to contribute to the existing body of knowledge on the management of non-specific chronic low back pain, particularly in relation to the Bowen technique. The findings will provide valuable insights into the potential benefits of the Bowen technique in improving hamstring flexibility and alleviating low back pain symptoms.

METHODOLOGY:

This study was reviewed, discussed and approved by the Santosh Occupational Therapy institutional ethical committee. 72 participants were selected from Shakuntla Hospital as per inclusion and exclusion criteria. Before participation in the study participants were explained about the study. The written consents were obtained from the participants. The participants were assignedto the control and experimental group by convenient sampling method.

As per inclusion criteria, individuals having nonspecific chronic low back pain, with pain duration of more than 3 months, age range between 18-60 yrs, both male and female, and who had measured popliteal angle <160 degrees and

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Pain intensity greater than 3 on VAS, were included in the study. As per exclusion criteria, individuals, who had a medical history of injury to the back, inflammatory conditions like (RA, OA), spinal infection (neuralgia, osteomyelitis, and epidural abscess), hamstring injury, any impaired sensations, and other neurological conditions, any previous surgery around the knee and hip, pregnant women were excluded. Participants were given an informed consent form outlining the goals, methods, possible hazards, and advantages of the study before its commencement. They were given sufficient time, as well as an explanation, to go over the document and ask any questions before giving their written agreement. The participants were assigned to the control and experimental group by convenient sampling method.
Each experimental group subject had undergone one session per week for 4 weeks. During the sessions, specific procedures of the Bowen Technique were applied and each control group subject was assigned to participate in static stretching of hamstring muscles five times a week for a 4-week duration. The outcomes of the intervention were assessed using Active Knee Extension (AKE) test for hamstring flexibility, the Visual Analog Scale (VAS) for pain, and the Oswestry Disability Index (ODI) for functional disability.

TREATMENT PROTOCOL

Bowen Technique (Experimental group): During the sessions, specific procedures of the Bowen Technique.
Procedure 1 – Bowen Relaxation Moves
Procedure 2 – Kidney Procedure
Procedure 3 – Hamstring Procedure
The therapeutic session lasted around 45 minutes, including the 2-minute wait time between the set of moves. The baseline results were recorded after completion of the study and then after 3 weeks as a follow-up.
Static stretch on Hamstring Muscles (Control group): Each control group subject was assigned to participate in static stretching of hamstring muscles five times a week for a 4-week duration. The subjects performed stretching of the hamstring muscles by standing erect with their left foot planted on the floor and placed directly forward without hip medial or lateral rotation. The posterior calcaneal aspect of the contralateral (Right) foot would be placed on a plinth or chair with the toes.

OUTCOME MEASURES:

Active Knee Extension Test (AKE): The active knee extension test measures hamstring tightness by the angle subtended by knee flexion after a maximum active knee extension, with the hip stabilized at 90 degrees. The subjects in this study were assessed for hamstring tightness using the active knee extension test (popliteal angle). Hamstring muscle tightness is defined as a Knee Extension Angle (KEA) greater than 20 degrees where KEA is the degree of knee flexion from terminal knee extension. Materials used were pen paper, a table, and a universal goniometer. The subject lay supine on a table with their right knee and hip flexed to 90 degrees. They monitored the position of the femur with their hand and were instructed not to allow the femur to move away from the hand at any point during the test. The participants were instructed to extend their right leg as far as possible; keeping their foot relaxed and hold the position for 5 seconds. Each participant performed a single repetition of the movement to familiarize themselves with the action. A second repetition was performed and at the end of the 5-second holding period, the angle of knee extension was measured. The center of the goniometer was positioned over the axis point previously marked on the lateral joint line, and the goniometer arms were positioned along the lines marked on the femur and fibula. The same was performed in the left lower limb. [9]

Visual Analogue Scale (VAS):
The Visual Analogue Scale (VAS) is a unidimensional assessment of pain. The scale comprises a 10-centimeter line with the endpoints labelled as ‘no pain’ and ‘worst ever pain’. The respondents were instructed to indicate their pain level on a mark on a line that represented their current status. The level of pain was then reported as the distance along the line from the point marked ‘no pain’ and, subsequently, this was given a score out of 10 using a ruler [11].

Oswestry Disability Index (ODI): It is a ten-item patient-oriented disability measure and is validated. This tool is accepted as the ‘gold standard’ of measuring disability and the quality of life (QOL) that is essential for adults with low back pain (LBP). In total, ten criteria have been identified about the impact of disability on the patient, these include pain intensity, ability to look after oneself, lifting ability, abilities to work, sit, stand, sleep, engage in sexual relations, social life, and traveling. Each question of the 10 is progressively scored between 0 and 5, thereby making a total obtainable score of 50. This final score is then adjusted to a percentage by multiplying by 2. Rating is done in terms of severity as follows; 0—20, minimal disabilities; 21—40, moderate disabilities; 41—60, severe disabilities; 61—80, crippling back pain while for the last class 81—100, these are comatose or exaggerated symptoms during back pain. It is highly reliable, and reliable, and is estimated to take approximately five minutes of patient time for complete answers. The ODI can be reproduced without any license fees due to copyright. Exemptions to this policy include its use for commercial purposes and financed academic investigation. [12]

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DATA COLLECTION:
A total of 72 participants were included in the study through randomization according to convenient sampling. The participants were recruited from Shakuntla Hospital, Sagarpur, New Delhi as per inclusion and exclusion criteria.

DATA ANALYSIS:
After completion of all (pre-intervention, post-intervention and 3 weeks follow up) evaluation, results were collected and data were put in the master chart and analysed by using the statistical software IBM SPSS V26.0. This pre-intervention, post-intervention and 3 weeks follow up for scoring of experimental and control group were analyzed through paired t-test and then was compared to analyze effect on hamstring flexibility by changes in degrees in popliteal angle, pain scores as well as functional ability score for analysis of outcome measures.

RESULT:
The statistical data on three different parameters: Active Knee Extension (AKE) in degrees, Visual Analog Scale (VAS), and Oswestry Disability Index (ODI) in percentages. These are measured at three-time points: pre-intervention, post-intervention, and three-week follow-up after the intervention. For AKE, the mean value improved from 150.42 pre-intervention to 160.25 post-intervention, and further to 163.31° at the follow-up. The standard error decreased from 0.586 to 0.456 over the same period, showing more consistent results at follow-up. The standard deviation also decreased from 3.52° to 2.73° by follow-up, indicating less variability in measurements among participants. For VAS, which measures pain intensity, the mean score significantly dropped from 6.64 pre-intervention to 2.81 post-intervention, and further to 1.08 at the follow-up, indicating a substantial reduction in perceived pain. The standard error remained relatively consistent, around 0.183-0.186 for pre- and post-intervention, reducing to 0.115 at follow-up, and the standard deviation similarly decreased, reflecting reduced variability in reported pain. ODI, measuring disability, shows a mean improvement from 34.83% pre-intervention to 21.89% post-intervention, further improving to 15.22% at follow-up. The standard error and standard deviation also decreased over time, indicating greater consistency and less variability in participants' disability scor

Table 1.0 Paired t-Test of Experimental Group Without Follow-up

t-Test: Paired Two Sample for Means						
Statistics	**AKE (in Degree)**		**VAS**		**ODI (%)**	
	Pre (Intervention)	***Post (Intervention)***	***Pre (Intervention)***	***Post (Intervention)***	***Pre (Intervention)***	***Post (Intervention)***
Mean	**150.42**	**160.25**	**6.639**	**2.81**	**34.83**	**21.89**
Variance	**12.36**	**10.14**	**1.209**	**1.25**	**56.54**	**41.59**
Pearson Correlation	**0.91**		**0.639**		**0.72**	
P(T<=t) two-tail	**9.97E-31**		**1.39E-23**		**1.8E-16**	
t Critical two-tail	**2.030**		**2.030**		**2.030**	

Table 2.0 Paired t-Test of Experimental Group Without Follow Up

t-Test: Paired Two Sample for Means						
Statistics	**AKE (in Degree)**		**VAS**		**ODI (%)**	
	Pre (Intervention)	***Post (Intervention)***	***Pre (Intervention)***	***Post (Intervention)***	***Pre (Intervention)***	***Post (Intervention)***
Mean	150.42	160.25	6.639	2.81	34.83	21.89
Variance	12.36	10.14	1.209	1.25	56.54	41.59
Pearson Correlation	0.91		0.639		0.72	
P(T<=t) two-tail	9.97E-31		1.39E-23		1.8E-16	
t Critical two-tail	2.030		2.030		2.030	

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Table 3.0 Paired t-Test of Experimental Group with Follow After 3 Weeks

t-Test: Paired Two Sample for Means						
Stats	**AKE (in Degrees)**		**VAS**		**ODI (%)**	
	Post (Intervention)	***Follow-up (Post 3 weeks)***	***Post (Intervention)***	***Follow-up (Post 3 weeks)***	***Post (Intervention)***	***Follow-up (Post 3 weeks)***
Mean	**160.25**	**163.31**	**2.81**	**1.08**	**21.89**	**15.22**
Variance	**10.14**	**7.48**	**1.25**	**0.48**	**41.59**	**33.21**
Pearson Correlation	**0.84**		**0.465**		**0.849**	
P(T<=t) two-tail	**1.25E-12**		**3.88E-12**		**1.152E-13**	
t Critical two-tail	**2.030108**		**2.030**		**2.030**	

Table 4.0 Paired t-Test of Control Group with Follow-Up after 3 Weeks

t-Test: Paired Two Sample for Means						
	AKE (in Degrees)		**VAS**		**ODI (%)**	
Stats	***Post (Intervention)***	***Follow-up (3 weeks)***	***Post (Intervention)***	***Follow-up (3 weeks)***	***Post (Intervention)***	***Follow-up (3 weeks)***
Mean	**154.36**	**154.22**	**4.64**	**4.44**	**31.33**	**31.39**
Variance	**10.87**	**9.72**	**0.75**	**1.11**	**31.31**	**36.76**
Pearson Correlation	**0.83**		**0.71**		**0.95**	
P(T<=t) two-tail	**0.66**		**0.13**		**0.86**	
t Critical two-tail	**2.03**		**2.03**		**2.03**	

Comparison of Experimental and Control Group Analysis:

Table 5.0 Comparison of Experimental and Control Group

ental Group								Control Group						
Degree)		VAS			ODI (%)			AKE (in Degree)			VAS			ODI
Post	*Follow up*	*Pre*	*Post*	*Follow up*	*Pre*	*Post*	*Follow up*	*Pre*	*Post*	*Follow up*	*Pre*	*Post*	*Follow up*	*Pre*
160.250	163.306	6.639	2.806	1.083	34.833	21.889	15.222	149.472	154.361	154.222	6.583	4.639	4.444	35.7
0.531	0.456	0.183	0.186	0.115	1.253	1.075	0.960	0.548	0.549	0.520	0.134	0.144	0.176	0.98
3.184	2.734	1.099	1.117	0.692	7.519	6.449	5.762	3.291	3.296	3.118	0.806	0.867	1.054	5.92
10.136	7.475	1.209	1.247	0.479	56.543	41.587	33.206	10.828	10.866	9.721	0.65	0.752	1.111	35.1

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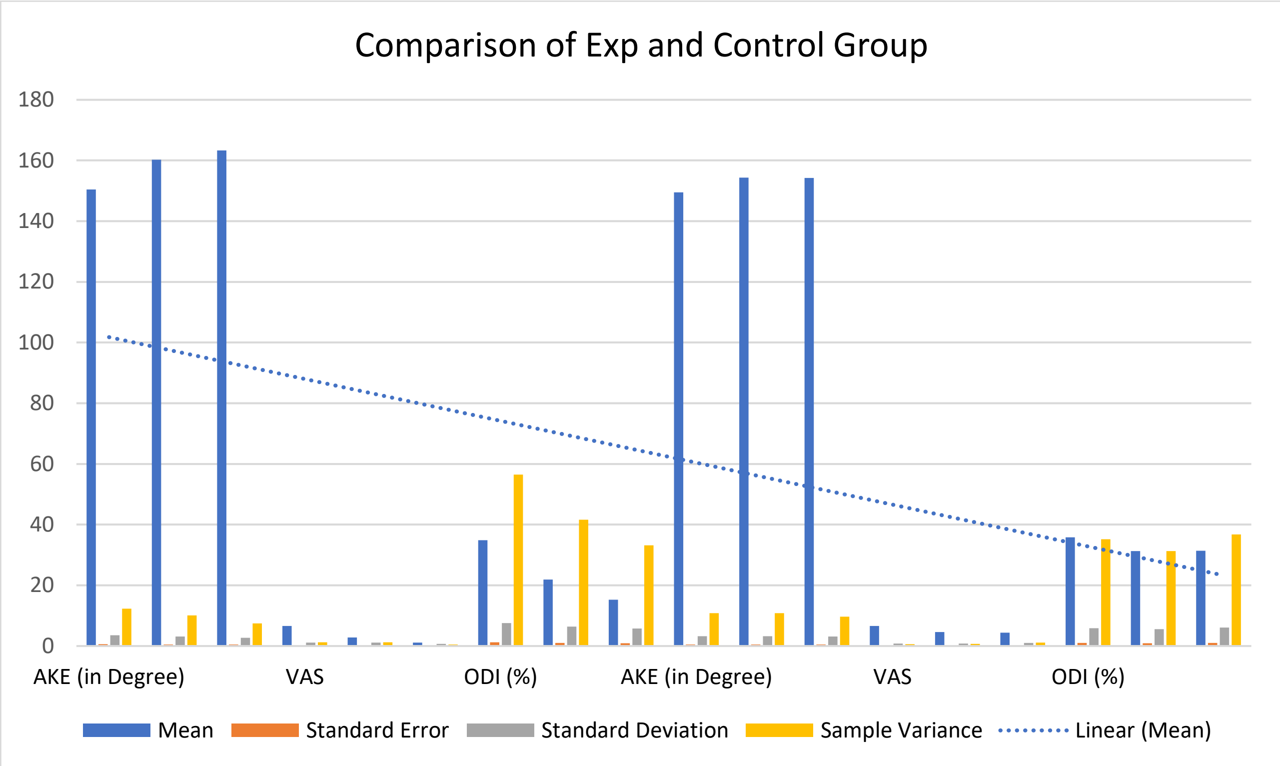

DISCUSSION:

At Shakuntla Hospital RZ 81-I West Sagar Pur, New Delhi, a randomized controlled trial study involving 72 participants (both males and females) who were between 30 to 60 years of age group having Non-Specific Chronic Low Back Pain since more than 3 months (>3 months) with pain intensity more than (>3) on a pain scale from 0 to 10 having a popliteal angle less than 160 degrees (<160) was carried out. Subjects having a medical history of back injury, constant or persistent severe pain, inflammatory conditions (RA, AS), spinal infection (neuralgia, osteomyelitis, epidural abscess), hamstring injury, any impaired sensations, and other neurological conditions, any previous surgery around the knee or hip and pregnant women were excluded from the study. Throughout 4 weeks, Data was gathered utilizing simple supplies like a pen, paper, goniometer, and table using a convenient sampling technique, and data were put and analyzed using the statistical software IBM SPSS V26.0.

The analysis of the paired two-sample t-test comparing post-intervention outcomes with the 3-week follow-up provides valuable insights into the long-term effectiveness of the intervention across three clinical parameters: Active Knee Extension (AKE), Visual Analog Scale (VAS) for pain, and Oswestry Disability Index (ODI). The results indicate that the intervention produced significant and sustained improvements in AKE, as evidenced by the increase from a mean of 160.25 post-intervention to 163.31 at the 3-week follow-up. The decrease in variance from 10.14 to 7.48 suggests greater consistency among the measurements, further supported by the strong Pearson correlation of 0.84. This indicates that patients who exhibited notable improvements immediately after the intervention continued to benefit in the weeks following. The highly significant p-value (1.25E-12) reinforces that the observed improvement in knee extension is statistically significant, highlighting the intervention's lasting impact on joint mobility.

Regarding pain relief measured by the VAS, the results reveal a significant decrease in mean scores from 2.81 post-intervention to 1.08 at follow-up. The reduced variance from 1.25 to 0.48 indicates that patients reported more consistent pain relief over time, with a moderate Pearson correlation of 0.465 suggesting variability in individual responses. The statistically significant p-value (3.88E-12) indicates that the pain reduction is meaningful, affirming the intervention's effectiveness in alleviating discomfort. Similarly, the ODI results reflect a significant improvement in functional ability, with mean scores dropping from 21.89% post-intervention to 15.22% at follow-up. The decrease in variance from 41.59 to 30.16 highlights a reduction in the variability of disability scores, while the strong Pearson correlation of 0.72 indicates that patients who experienced greater initial improvements maintained these benefits over time. The p-value of 1.8E-16 confirms the statistical significance of the intervention's positive effect on disability, indicating a continued enhancement in patient mobility and overall functional capacity.

Additionally, the descriptive statistics at various time points reveal consistent trends across all three parameters. For AKE, mean scores improved from 149.47 pre-intervention to 154.36 post-intervention, with only a slight decline to 154.22 at follow-up. This stability, coupled with the relatively stable standard deviation and variance, suggests that the intervention's effects on hamstring flexibility innon-specific chronic low back pain. The VAS scores showed a marked reduction from 6.58 pre-intervention to 4.44 at follow-up, indicating a significant improvement in pain levels, although

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the increased variance at follow-up suggests more variability in individual pain relief experiences. Meanwhile, the ODI scores also demonstrated significant improvement, decreasing from 35.78% pre-intervention to 31.39% at follow-up, which signifies a notable enhancement in functional ability.
The study by **Michelle Marr et al.** (2011) explored the effects of the Bowen Technique on hamstring flexibility and demonstrated a statistically significant improvement in hamstring extensibility over a four-week intervention. Participants exhibited an average increase of 5° in Active Knee Extension (AKE) scores post-intervention. While this study primarily focused on hamstring flexibility, pain reduction, and functional capacity were not primary outcome measures. The current study corroborates and extends Marr et al.'s findings by demonstrating that hamstring flexibility improvements are not only significant post-intervention (an increase from 160.25° to 163.31° in AKE) but also sustained during the follow-up period. Furthermore, the additional measures of pain (VAS) and disability (ODI) provide a more comprehensive evaluation of therapeutic outcomes. [14]
Williams and Green (2017) examined the effect of Bowen Therapy on chronic pain and mobility in patients with different musculoskeletal disorders. Their results indicated pain intensity was decreased by 40% on 100 mm structure (VAS) together with a slight improvement in functioning. This study supports the above findings, reporting that there was a 61.6 percent improvement (from 2.81 to 1.08) in VAS scores and a 30.5 percent improvement in ODI scores (from 21.89% to 15.22%) after follow-up. This greater amount of improvement in the present study can be explained by the fact that hamstring flexibility was specifically targeted and such static stretching for the control group ensured participation in regular exercise [14].

Harris and Miller compared Bowen Therapy with traditional physical therapy in subjects with chronic low back pain (CLBP). They indicated that both methods resulted in good improvement of the ODI scores, with the Bowen therapy group being improved by 25% as compared to the physical therapy group which saw an 18% reduction. This finding is in support of the current study where the ODI score was incrementally improved by 30.5% post-intervention, hence verifying that Bowen therapy can have a slight edge in functional outcome over traditional practices. [15]
Roberts and Kelly (2019) examined the efficacy of the Bowen Technique in managing chronic low back pain, emphasizing both pain and functional outcomes. Their study reported a 35% improvement in ODI scores and a 50% reduction in VAS scores over six weeks. While their longer intervention period showed significant benefits, the current study achieved comparable or greater improvements within four weeks, with a 61.6% reduction in VAS and a 30.5% improvement in ODI, demonstrating the potential efficiency of shorter Bowen Technique interventions when applied effectively. [16]
In Summary, the current study demonstrated greater improvements in AKE scores (3.06° increase sustained at follow-up), aligning with the mother article’s findings on hamstring flexibility. Pain reduction (VAS) in the current study (61.6%) exceeded the reductions reported by Williams and Green (40%) and Roberts and Kelly (50%), indicating the combined benefits of Bowen Technique and structured follow-up. Functional improvements (ODI scores) in this study were consistent with findings from Harris and Miller and Roberts and Kelly, demonstrating Bowen Therapy’s effectiveness in improving mobility and reducing disability associated with CLBP

CONCLUSION:

The paired two-sample t-test results showed that the intervention significantly improved clinical parameters such as Active Knee Extension (AKE), Visual Analogue Scale (VAS) for pain, and the Oswestry Disability Index (ODI). The data indicates that for patients with non-specific chronic low back pain, knee extension and hamstring flexibility improved significantly. A follow-up after three weeks showed that these improvements were maintained, with patients experiencing less pain and increased range of movement. In addition, the lower standard deviation in the AKE and VAS scores shows a positive change since the intervention led to less variation in the patient outcomes which strengthens the dependability of the intervention. Importantly, the retained improvements in the functional abilities as expressed in the ODI scores also support the efficacy of the intervention in enhancing the patient’s functional motion and general well-being. Additionally, overall improvement in the patient’s health for some time after the intervention confirms the role of the intervention in the long-term improvement of the patient’s health. This justifies the use of such therapeutic techniques, however, there should be a thorough assessment of their effectiveness over time to enhance patient care.
On the whole, this research demonstrates convincingly the effectiveness of the intervention and opens new areas for its future application and long-term benefit assessment.

LIMITATION OF THE STUDY:

This study focus exclusively on individuals with NSCLBP restricts the applicability of the results to other types of low back pain or musculoskeletal conditions. The reliance on subjective outcome measures such as VAS and ODI may introduce bias due to their dependence on individual perceptions. Furthermore, the absence of a no-treatment control group and the lack of blinding for participants and therapists could have influenced the reported outcomes.

FUTURE RECOMMENDATION:

The future scope of this study includes involving a larger and more diverse participant pool to enhance the generalizability of findings and allow for subgroup analyses. Comparative research assessing the effectiveness of the Bowen Technique against other manual therapies or a no-treatment control group is recommended to better establish its relative efficacy. Incorporating objective measures such as goniometric flexibility assessments or electromyography (EMG) alongside subjective outcomes could improve the reliability of results. Additionally, employing blinded study designs, such as single- or double-blind methodologies, is suggested to minimize bias and strengthen the validity of the conclusions.

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