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**ORIGINAL ARTICLE**

# A Comparative Study of McKenzie Back Program and Conventional Physiotherapy in Relieving Backache due to Lumbar Disc Prolapse

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## ABSTRACT

**Introduction:** Low Back Pain (LBP) is considered as one of the commonest problems, in which pain felt in the lumbosacral spinal and paraspinal regions which encompass the buttocks and upper thigh.

**Objectives:** The main objective of the study is to find the comparison between McKenzie back program and conventional physiotherapy in relieving backache due to lumbar disc prolapse.

**Material and methods:** This cross sectional study was conducted in Rashid Latif Medical College Lahore during January 2022 to June 2022. Persons having MRI and previously diagnosed as Disc herniation or Lumbar disc herniation LDH or Prolapsed Lumbar intervertebral disc (PLID) were also enrolled and screened for the second time, the persons who had no MRI were advised to perform with proper justification.

**Results:** Data was collected from 40 patients. There were 22 females and 18 males. Both groups were matched as regards age, gender, weight, height, and BMI. ODI scores showed a significant decrease in both groups post-treatment ($p = 0.001$) indicating a decrease of functional disability. The percentage of decrease in Oswestry scores was higher in group B than group A (6.87% versus 4.82%).

**Practical Implication:** This study will be helpful in reducing pain, increasing lumbar spine mobility and decreasing disability.

**Conclusion:** It is concluded that McKenzie back program is more effective in reducing pain, increasing lumbar spine mobility and decreasing disability than conventional physiotherapy and stretching exercises in patients with backache due to lumbar disc prolapse.

**Keywords:** Effective, Backache, Pain, Disability

## INTRODUCTION

Low Back Pain (LBP) is considered as one of the commonest problems, in which pain felt in the lumbosacral spinal and paraspinal regions which encompass the buttocks and upper thigh. LBP is one of most common medical problems that lead to absence from work, the disability arising from this pain resulting in significant economic impact. In addition, LBP can lead to activity restrictions such as carrying objects, sitting or standing for a long time, twisting and squatting, which can result in participation limitation (work, recreation activities, family and community) and functional disability. A previous systematic review) reported the point prevalence of LBP is estimated at 21−33% and 22–65% for one-year prevalence. It has been reported that lifetime prevalence of low back pain globally is as high as 84%[1]. Homaid et al. reported that global prevalence of LBP is 45% in Saudi Arabia, and the prevalence of LBP is estimated to be 18%. Heyman and Dekel stated that back pain problems occur more in adults and detailed that the frequency of low back pain amongst females is more than males and increases with age across both genders[2].

The first is McKenzie exercises, devised by Robin McKenzie, also known as diagnostic and mechanical therapy. This is a common method used among physiotherapists as a treatment method for handling back pain. Additionally, Kuppusamy et al. reported that the McKenzie exercises are considered to be frequently used by physiotherapists in the treatment of LBP[3]. Improvement in symptoms is successively measured in terms of 'centralization', a phenomenon that has been commonly used). It combines recurrent end range actions by examination; the classification of direction for exercise is contingent upon the patient's response to those recurring actions. Posture correction ensuring the maintaining of the correction is a vital characteristic of the McKenzie exercise[4].

Mechanical low back pain (LBP) remains a vital health drawback and a serious explanation for incapacity within the operating age, and in most of the cases, there is no clear underlying pathology. There are several factors inflicting mechanical low back pain, like excessive masses to normal spinal structures[5]. The loads transmitted to the spine are affected by posture, body mechanics, trunk strength, and also flexibility in addition to strength of the muscles of the pelvic arch and lower extremities. McKenzie extension exercise could be a treatment of selection of LBP that specializes in sustained posture or continual movement, which will cause marvelous improvement in pain intensity[6]. Studies have shown that the goals of McKenzie program have resulted in decreasing and rising pain, improvement of body part quality, and return to normal functioning in daily activities. Muscle energy technique is an associate degree of osteopathic manipulation methodology. The muscles of patients were used, on request, to type a singular controlled position, in a very specific direction, and against a distinctly executed therapist-applied counterforce. Muscle energy technique could be a post-isometric relaxation, because it reduces the tone of a muscle or cluster of muscle after a brief period following an isometric contraction[7]. The result of post-isometric relaxation is mediated by receptive input from Golgi connective tissue organ (GTO) that has associate degree repressive result on the antagonist muscles mediated by the muscle spindle receptive[8].

**Objectives:** The main objective of the study is to find the comparison between McKenzie back program and conventional physiotherapy in relieving backache due to lumbar disc prolapse.

## MATERIAL AND METHODS

This cross sectional study was conducted in Rashid Latif Medical College Lahore during January 2022 to June 2022. Persons having MRI and previously diagnosed as Disc herniation or Lumbar disc herniation LDH or Prolapsed Lumbar intervertebral disc (PLID) were also enrolled and screened for the second time, the persons who had no MRI were advised to perform with proper justification. Samples were enrolled in the study through hospital randomization and voluntary participation.

Group A patients received McKenzie extension exercise program which included active back extension from prone, upper back strengthening, push-up, and back extension from standing.

Group B patients received muscle energy technique which involved isometric contraction of the agonist muscle for 10 s. This contraction started just short of the restriction range. After that, the patient was asked to relax for 2–3 s, and then, the examiner stretched the contracted muscle in the opposite direction for 10 s. This was repeated three repetitions for each muscle bilaterally.

The collected data were coded, tabulated, and statistically analyzed using IBM SPSS Statistics (Statistical Package for Social Sciences) software version 22.0.

## RESULTS

Data was collected from 40 patients. There were 22 females and 18 males. Both groups were matched as regards age, gender, weight, height, and BMI. ODI scores showed a significant decrease in both groups post-treatment ($p = 0.001$) indicating a decrease of functional disability. The percentage of decrease in Oswestry scores was higher in group B than group A (6.87% versus 4.82%). However, no significant difference was detected between both groups regarding ODI scores pre- or post-treatment.

Table 1: General characteristics of both groups

| | Group A | Group B | t value | P value |
|---|---|---|---|---|
| Age (yrs.) | 30.10 ± 6.84 | 33.20 ± 6.62 | 1.457 | 0.15 |
| Gender | | | | |
| Female | 12 (60.0%) | 10 (50.0%) | 0.404 | 0.52 |
| Male | 8 (40.0%) | 10 (50.0%) | | |
| Weight (kg) | 84.20 ± 4.97 | 86.75 ± 8.98 | 1.111 | 0.27 |
| Height (cm) | 172.10 ± 8.80 | 168.15 ± 5.08 | 1.738 | 0.09 |
| BMI (kg/m$^2$) | 28.62 ± 3.29 | 30.80 ± 4.21 | 1.823 | 0.076 |

Table 2: Comparison between mean scores of ODI within and between both groups

| | Group A | Group B | P value |
|---|---|---|---|
| Pre-treatment | 52.95 ± 6.33 | 52.22 ± 14.45 | 0.71 |
| Post-treatment | 50.40 ± 6.17 | 48.63 ± 14.29 | 0.75 |
| Mean difference | 2.55 | 3.59 | |
| % change | 4.82 | 6.87 | |
| Z value | − 3.925 | − 3.926 | |
| p value | 0.001 (S) | 0.001 (S) | |

## DISCUSSION

Pain relief in taping group was believed to be because of suppression of pain fibers from the involved segment and also improving proprioception thereby correcting the faulty movements. McKenzie approach increases endorphin, centralize the pain, and develop the muscular support of their trunk and spine, so it reduces pain and improves functional ability for Mechanical low back pain individuals[8-10]. In dysfunction syndrome there is restriction of spinal movements due to adaptive shortening and loss of elasticity of muscle. Since the McKenzie approach centralizes pain and develops muscular support of trunk and spine and decreases stress on intervertebral disc. There is a greater pain relief and improvement in functional abilities of Mechanical low back pain individuals[11].

Many studies confirmed the positive effects of McKenzie method. Similarly, a body of evidence confirms the therapeutic value of MET. Moreover, positive outcomes of both these techniques were documented in patients with spinal pain, including LBP. However, to the best of our knowledge, none of the previous studies verified whether the combination of these methods improves the therapeutic outcome[12].

Noticeably, both the therapies are based on different concepts and involve different therapeutic techniques. The McKenzie method is oriented at the management of all structural abnormalities of the spinal discs[13]. The aim of this therapy is to eliminate pain and normalize function of the affected spinal segment. Therefore, McKenzie method focuses on the treatment of spinal disc pathologies as the principal cause of pain. Takasaki et al. documented positive changes in the spinal disc, i.e. the resolution of herniation, in patient treated with McKenzie method[14].

However, various injuries and other medical conditions, as well as repetitive negative motor pattern, are also reflected by the disorders of the musculofascial system. This can be reflected by the development of certain compensatory mechanisms, accumulation of muscular tension, motor limitation, and functional disorders[15]. In contrast, the treatment of the musculofascial system is not included in the concept of McKenzie method. Therefore, the aim of including the muscle energy techniques in the proposed protocol of combined therapy was to potentiate its therapeutic effect through the relaxation and stretching of contracted musculature, strengthening of weakened muscles, reduction of passive muscular tension, improvement of joint mobility, and normalization of motor function[16].

## CONCLUSION

It is concluded that McKenzie back program is more effective in reducing pain, increasing lumbar spine mobility and decreasing disability than conventional physiotherapy and stretching exercises in patients with backache due to lumbar disc prolapse.

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