Effects of Conventional Physiotherapy Treatment on Kinesiophobia, Pain, and Disability in Patients with Mechanical Low Back Pain

Abstract

**Background:** Low back pain (LBP) is often associated with physical discomfort and functional limitations that may cause disability and interfere with their quality of life. Conventional physiotherapy treatment includes hot pack, back flexion, and extension exercises with few stretching exercises. **Aim:** The aim of this study was to check the effects of conventional physiotherapy treatment on kinesiophobia, pain, and disability in mechanical LBP. **Materials and Methodology:** The study was conducted in the outpatient department of a physiotherapy college. The target population was patients with subacute and chronic LBP with a sample size of 30 and employing convenient sampling type. The outcome measures used were Tampa Scale for Kinesiophobia (TSK), Visual Analog Scale (VAS) for pain, and Oswestry Disability Index (ODI) for disability. **Results:** Thirty samples that had LBP were evaluated. Pretreatment VAS at rest was 4.133 ± 1.59, which significantly reduced to 1.533 ± 0.68 post treatment with a t-value of 9.64. Pretreatment VAS on activity was 7.667 ± 0.71, which significantly reduced to 1.867 ± 0.71 post treatment with a t-value of 24.4. Pretreatment value for TSK was 49.6 ± 4.11, which reduced to 34.13 ± 3.13. Pretreatment value for ODI was 38.13 ± 9.49, which reduced to 24.4 ± 8.84. **Conclusion:** This study concluded that conventional physiotherapy treatment produces effectiveness in reducing pain, kinesiophobia, and disability in patients with mechanical LBP.

**Keywords:** Kinesiophobia, low back pain, physiotherapy

Introduction

Low back pain (LBP) may be a rife disorder in trendy society, with 80% of the population stricken by it, to a minimum of once in their lifetime. Among them, 7%–10% can develop subacute and chronic LBP (CLBP) and 1% can have physical disabilities.[1] LBP is not solely painful, however conjointly ends up in loss of performance, so this condition hampers a healthy lifestyle. LBP is seen more during the second and fourth decades of life. LBP is caused by disc degeneration and facet joint or sacro-iliac joint arthropathy along with soft-tissue injury on the trunk or any part of the spine. Spinal instability restricts the muscle strength, endurance, flexibility, and Active range of motion.

If the pain still persists for more than a month, it restricts the trunk movement to minimize pain in the lumbosacral area or leg, which can aggravate the level of lumbar muscle weakness in paraspinal muscles. Thus, transverse abdomen and erector spinae are crucial in rising the body part stability. LBP patients suffer from activity limitation because of weakness of these muscles of lumbar spine. Exercises are good option to increase muscle strength.[1] Lack of exercise, prolonged poor posture, vitamin deficiencies, sleep disturbances, and joint problems may all predispose to the development of microtrauma. Occupational or recreational activities that produce repetitive stress on a specific muscle or muscle group commonly cause chronic stress in muscle fibers, leading to LBP. Examples of predisposing activities include prolonged bending over a table and sitting in chairs with poor back support. Painful experience can cause fear of movements and injury in certain individuals, which often leads to functional disability. Painful experience also causes concern of movements and injury among people, which regularly ends up with functional disability.

Thus, it is necessary to develop strategies to eliminate kinesiophobia so that it will...
not develop within patients with LBP. Pain-associated concern has been progressively recognized as a significant contributor to the upkeep of pain. LBP is directly proportional to reduced activity level. Pain could result in a rise of pain-associated concern, which is in turn is related to dodging behaviors and hypervigilance to bodily sensation and pain. Depression and neglect is equally proportional to reduced pain tolerance and hence promote painful experiences. Kinesiophobia is one among the foremost extreme styles of concern of pain because of movement or re-injury. Self-report measures are a very important tool in obtaining data related to pain-associated concern in chronic pain patients. Many questionnaires of pain-associated concern are available. Pain related concern associated with movement restriction can be measured by Tampa Scale of Kinesiophobia (TSK). The prevalence of kinesiophobia in patients with LBP was found to be 59%. because the intensity of pain will increase in LBP, the event of kinesiophobia conjointly exaggerated and its association is exhibited. The development of kinesiophobia has an incontestable exaggerated useful incapacity wherever correlation between kinesiophobia and the Oswestry Disability Index (ODI) shows moderate correlation. CLBP is the one which persists >12 weeks and is regularly associated with psychological disturbances, with anxiety being one of the most common types of psychological problems in sufferers with LBP.

Specific stabilization routines decrease ache and incapacity in LBP. The exercise application includes active participation to improve the lumbar stability by recuperating the potential to manage muscular tissues and movements through muscle strengthening. Heat plus exercise together proved to significantly reduce pain and cause improvement in function rather than exercise alone. Heat is simple to apply and is inexpensive. It may be used by patients with LBP at home with ease. Heat application is recommended by practitioners as a part of a remedy regimen. Against this background, the present study has been designed to evaluate the effects of conventional physiotherapy treatment on kinesiophobia, pain, and disability in mechanical LBP.

Materials and Methodology

The present study was an experimental study. It was conducted in the outpatient department of a physiotherapy college. The target population was patients with subacute and CLBP with a sample size of 30 and employing convenient sampling type. The outcome measures used were TSK (scores 1–68), Visual Analog Scale (VAS) for pain (scores 0–10), and ODI (scores 0–50). The inclusion criteria were male and female patients with subacute and CLBP in the age group of 30–60 years with limited range of motion due to pain. The exclusion criteria were individuals with recent injury to the lower back, impaired sensation, spinal conditions such as prolapsed, herniated, or extruded intervertebral disc, herniated disc, stenosis, malignancy, Pott’s spine, fracture of the spine, and spinal deformities.

Procedure

Pretreatment assessment was taken (VAS at rest, VAS with activity, TSK, and ODI). Conventional physiotherapy treatment administered was hot pack for 10 min followed by pelvic bridging, pelvic tilt exercises, back extension exercises, static abdominal exercises, knee to chest exercises, lion exercises, cat–camel stretch, and curl-up exercises with ten repetitions per set three times/day and 5 days/week. This was done at the clinic under the supervision of a physiotherapist. Posttreatment scores were recorded for the outcome measures similar to pretreatment assessment.

Data analysis

The collected data were entered in an excel sheet. Inferential statistics were calculated using paired “t” test. The level of significance was fixed at $P < 0.05$.

Results

Thirty patients completed the study. There were twenty males and ten females. At rest: The pre-VAS score was 4.133 and post-VAS score was 1.533. Comparison showed that there was a statistically significant difference between the two scores. On activity: The pre-VAS score was 7.667 and post-VAS score was 1.867. Comparison showed that there was a statistically significant difference between the two scores (Table 1).

The pre-TSK score was 49.6 and post-TSK score was 34.13. Comparison showed that there was a statistically significant difference between the two scores (Table 2).

The pre-ODI score was 38.13 and post-ODI score was 24.4. Comparison showed that there was a statistically significant difference between the two scores (Table 3).

Discussion

The present study evaluated kinesiophobia, pain, and functional disability in patients with LBP after treating them with conventional physiotherapy exercise. Evidence shows

Table 1: Comparison of pre- and post-mean values of Visual Analog Scale (at rest) and Visual Analog Scale (on activity)

|          | Pre (mean±SD) | Post (mean±SD) | $t$  | $P$   |
|----------|---------------|----------------|------|-------|
| At rest  | 4.133±1.59    | 1.533±0.68     | 9.64 | <0.01 |
| On activity | 7.667±0.71   | 1.867±1.07     | 24.4 | <0.01 |

Table 2: Comparison of pre- and post-values of Tampa Scale for Kinesiophobia

|          | Pre | SD | Post | SD | $T$  | $P$   |
|----------|-----|----|------|----|------|-------|
| Tampa    | 49.6| 4.116| 34.13| 3.137| 19.789| 0.000 |

SD: Standard deviation
The present study shows that kinesiophobia are interrelated; hence, in the present study, pain reduction because of depression and disuse. Pain and kinesiophobia are interrelated; hence, in the present study, pain reduction after the treatment has resulted in significant amount of reduction in TSK scores.

Exercises which include back flexion and extension movements such as pelvic tilts, bridging, and static abs were effective in terms of greater reduction in pain in patients with nonspecific LBP. In the present study, it was noted that the conventional exercises focused on muscle strength rather than postural strategies, which significantly showed improvements in patients.

The intensity and quality of pain are directly proportional to the severity of an injury, which, in turn, leads to disability. The present study shows that kinesiophobia and LBP are interrelated. Some individuals with musculoskeletal pain develop a chronic pain syndrome, which means “fear which will occur while performing any activity because of pain or recurrence of an injury.” Two different types of behavior are observed: (1) a person will choose to suffer from pain to overcome physical activity limitation and (2) a person will not choose to suffer from pain to overcome physical activity limitation as he/she believes that the activity level is directly proportional to increase in pain. In clinical practice, if fear of movement is present in case of LBP, kinesiophobia must be taken as a part of rehabilitation. A study done in 2016 by Odole et al. suggested that patients exhibited kinesiophobia who had pain for a long duration. Resting and guarding have been consistently found to be associated with worst outcomes. Their study revealed high extent of kinesiophobia with increased level of pain.

Spinal stabilization exercises are helpful in regaining the muscle strength of paraspinal muscles. Segmental stabilization of multifidus will help in increasing the strength and reducing the LBP. Reduction in pain will eventually lead to reduction in kinesiophobia. This, in turn, helps in reducing the functional disability of patients with LBP; hence, the present study has shown significant amount of reduction in ODI scores post treatment.

The present study has some limitations: small sample size, intervention was given for shorter duration, and long-term effectiveness was not assessed.

Conclusion
This study concluded that conventional physiotherapy treatment was effective in reducing pain, kinesiophobia, and disability in patients with mechanical LBP.

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Conflicts of interest
There are no conflicts of interest.

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Table 3: Comparison of pre- and post-values of Oswestry Disability Index

|         | Pre  | SD   | Post | SD   | T    | P     |
|---------|------|------|------|------|------|-------|
| ODI     | 38.13| 9.49 | 24.4 | 8.842| 11.946| <0.01 |

ODI: Oswestry Disability Index, SD: Standard deviation