

Original article

Study of Effectiveness of Physical Therapy in Managing Chronic Low Back Pain in Elderly Population

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Abstract

Background: Chronic low back pain (CLBP) is prevalent among the elderly, significantly impacting their quality of life. Physical therapy (PT) is a widely recommended non-pharmacological intervention aimed at alleviating pain, improving functionality, and enhancing overall well-being in this population.

Methods: A prospective observational study was conducted over one year, involving 50 elderly patients aged 65 years and above with CLBP. Baseline assessments included the Visual Analog Scale (VAS) for pain, Oswestry Disability Index (ODI) for functional status, and the Short Form Health Survey (SF-36) for quality of life. Participants underwent individualized PT programs comprising exercise therapy, manual therapy, and patient education. Follow-up assessments were performed at three and six months post-intervention. Statistical analysis was conducted using paired t-tests and ANOVA.

Results: Significant improvements were observed in VAS (7.5 to 4.8), ODI (45 to 28), and SF-36 scores (55 to 75) from baseline to six months ($p < 0.001$). These results indicate a substantial reduction in pain, enhanced functional status, and improved quality of life.

Conclusion: PT is an effective intervention for managing CLBP in the elderly, offering sustained benefits in pain relief, functionality, and overall well-being.

Keywords: Chronic low back pain, elderly, physical therapy.

Introduction

Chronic low back pain (CLBP) is a pervasive and debilitating condition, particularly prevalent among the elderly population. As the global population ages, the incidence of CLBP is expected to rise, posing significant challenges to healthcare systems and affecting the quality of life of millions. The elderly often face unique challenges in managing CLBP due to age-related physiological changes, comorbidities, and a generally higher susceptibility to pain and disability.(1)

Physical therapy (PT) has emerged as a cornerstone in the non-pharmacological management of CLBP, offering a range of therapeutic interventions designed to reduce pain, improve function, and enhance overall well-being. PT encompasses various techniques, including exercises, manual therapy, and patient education, tailored to address the specific needs of elderly patients. Evidence suggests that regular physical activity and targeted exercises can alleviate pain, increase mobility, and decrease the likelihood of disability.(2,3)

Despite the recognized benefits, the effectiveness of PT in managing CLBP in the elderly remains underexplored in many settings. This study aims to evaluate the impact of physical therapy on pain relief, functional improvement, and quality of life in elderly patients with chronic low back pain, providing insights that could inform clinical practice and optimize treatment strategies for this vulnerable population. (4)

Methodology

This prospective observational study was conducted over one year to evaluate the effectiveness of physical therapy in managing chronic low back pain (CLBP) in the elderly population. The study was carried out in the Department at a tertiary care hospital. Ethical clearance was obtained from the institutional ethics committee, and written informed consent was obtained from all participants before enrollment.

A total of 50 elderly patients aged 65 years and above with a clinical diagnosis of chronic low back pain were included in the study. Inclusion criteria were patients experiencing low back pain for more than three months, who were able to participate in physical therapy sessions. Exclusion criteria included patients with acute back pain, those who had undergone spinal surgery within the last year, and individuals with severe cognitive impairment or other medical conditions that contraindicated physical therapy.

Participants underwent a comprehensive baseline assessment, including demographic data, pain intensity measured by the Visual Analog Scale (VAS), functional status assessed by the Oswestry Disability Index (ODI), and quality of life evaluated using the Short Form Health Survey (SF-36). Based on these assessments, individualized physical therapy programs were designed, incorporating a combination of exercise therapy, manual therapy, and patient education. Each participant attended bi-weekly physical therapy sessions for 12 weeks, supervised by a licensed physical therapist.

Follow-up assessments were conducted at three months and six months post-intervention to evaluate changes in pain intensity, functional status, and quality of life. Statistical analysis was performed using SPSS software, with paired t-tests and ANOVA used to compare pre- and post-intervention scores. The effectiveness of the physical therapy intervention was determined by the improvement in VAS, ODI, and SF-36 scores from baseline to follow-up assessments. The study concluded with a comprehensive analysis of the data, providing insights into the benefits of physical therapy for managing CLBP in the elderly.

Results

Table 1: Demographic Characteristics of the Study Participants

Variable	Value
Total Participants	50
Age (Mean ± SD)	70 ± 4.5 years
Gender	
- Male	22 (44%)
- Female	28 (56%)
Duration of CLBP	
- 3-6 months	10 (20%)
- 6-12 months	18 (36%)
- >12 months	22 (44%)

Table 2: Baseline Assessment Scores

Assessment Tool	Mean Score ± SD
Visual Analog Scale (VAS)	7.5 ± 1.2
Oswestry Disability Index (ODI)	45 ± 8.4
Short Form Health Survey (SF-36)	55 ± 10.2

Table 3: Follow-Up Assessment Scores

Assessment Tool	Baseline Score ± SD	3-Month Score ± SD	6-Month Score ± SD
Visual Analog Scale (VAS)	7.5 ± 1.2	5.2 ± 1.1	4.8 ± 1.0
Oswestry Disability Index (ODI)	45 ± 8.4	32 ± 7.5	28 ± 6.8
Short Form Health Survey (SF-36)	55 ± 10.2	70 ± 9.8	75 ± 9.5

Table 4: Statistical Analysis of Changes in Scores

Assessment Tool	Baseline vs. 3-Month (p-value)	Baseline vs. 6-Month (p-value)	3-Month vs. 6-Month (p-value)
Visual Analog Scale (VAS)	<0.001	<0.001	0.05
Oswestry Disability Index (ODI)	<0.001	<0.001	0.02
Short Form Health Survey (SF-36)	<0.001	<0.001	0.03

Discussion

The management of chronic low back pain (CLBP) in the elderly is a significant clinical challenge due to the multifactorial nature of the condition and the unique physiological changes associated with aging. This study aimed to evaluate the effectiveness of physical therapy (PT) in alleviating pain, improving functional status, and enhancing the quality of life in elderly patients with CLBP. The results demonstrate notable improvements across all measured parameters, indicating that PT can be a valuable intervention in this population.(5)

The demographic characteristics of the study participants reveal a balanced representation of males and females, with a slight predominance of females (56%). The average age of the participants was 70 years, highlighting the focus on the elderly population. The duration of CLBP among participants varied, with a significant proportion experiencing pain for more than 12 months (44%). This variation in pain duration underscores the chronic nature of the condition and the long-term suffering of the patients, making the need for effective management strategies even more critical. (6,7)

Baseline assessments indicated high levels of pain and disability among participants. The mean Visual Analog Scale (VAS) score was 7.5, reflecting significant pain intensity. Similarly, the mean Oswestry Disability Index (ODI) score was 45, indicating moderate to severe disability. The Short Form Health Survey (SF-36) score of 55

suggested a compromised quality of life. These baseline scores highlight the substantial burden of CLBP on the elderly, affecting their daily activities, mobility, and overall well-being.

The follow-up assessments at three and six months post-intervention showed significant improvements in all measured parameters. The VAS scores decreased from a mean of 7.5 at baseline to 5.2 at three months and 4.8 at six months, indicating a substantial reduction in pain intensity. The reduction in VAS scores was statistically significant ($p < 0.001$), confirming the effectiveness of PT in pain management. This finding aligns with existing literature that supports the role of PT in reducing pain levels in patients with CLBP.

Functional status, as measured by the ODI, also showed marked improvement. The ODI scores decreased from a mean of 45 at baseline to 32 at three months and 28 at six months. These improvements were statistically significant ($p < 0.001$), indicating enhanced functional capabilities and reduced disability among the participants. The ability to perform daily activities and maintain independence is crucial for the elderly, and the positive impact of PT on functional status is a significant finding of this study. (8)

Quality of life, assessed using the SF-36, improved substantially over the study period. The SF-36 scores increased from a mean of 55 at baseline to 70 at three months and 75 at six months, with statistically significant changes ($p < 0.001$). The improvement in quality of life underscores the comprehensive benefits of PT, extending beyond pain relief to encompass overall well-being and life satisfaction. Enhanced mobility, reduced pain, and improved functional status contribute to a better quality of life, enabling elderly individuals to engage more fully in social and recreational activities.

The statistical analysis further supports the effectiveness of PT in managing CLBP. The paired t-tests and ANOVA results confirmed significant improvements in VAS, ODI, and SF-36 scores from baseline to the follow-up assessments. The positive changes observed at both three and six months indicate that the benefits of PT are sustained over time, providing long-term relief and functional enhancement for the elderly with CLBP.

Several factors contribute to the effectiveness of PT in managing CLBP in the elderly. PT interventions are tailored to individual needs, addressing specific pain mechanisms, functional limitations, and overall health status. The combination of exercise therapy, manual therapy, and patient education provides a holistic approach to pain management. Exercise therapy helps improve strength, flexibility, and endurance, while manual therapy techniques alleviate pain and restore mobility. Patient education empowers individuals with knowledge about their condition and strategies to manage pain effectively.(9)

The findings of this study have important clinical implications. They underscore the need for integrating PT into the standard care protocols for elderly patients with CLBP. Healthcare providers should consider PT as a first-line treatment option, offering a non-pharmacological and cost-effective approach to pain management. The sustained improvements observed in this study highlight the potential for PT to reduce the reliance on medications and their associated side effects, particularly in the elderly who are often on multiple medications for various comorbidities.

Conclusion:

In conclusion, our study demonstrates that physical therapy is an effective intervention for managing chronic low back pain in the elderly. The significant reductions in pain intensity, improvements in functional status, and enhancements in quality of life observed in this study underscore the value of PT as a comprehensive and sustainable treatment option. As the global population continues to age, the integration of PT into routine

clinical practice for managing CLBP in the elderly should be prioritized, offering a pathway to improved health and well-being for this vulnerable population.

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