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Article

Prevalence of Chronic Low Back Pain and Its Association with Physical Activity Levels Among Adults Attending Physiotherapy Clinics: A Cross-Sectional Study

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ABSTRACT

Background: *Chronic lower back pain represents one of the main sources of disability, creating a significant clinical problem. The role of physical activity as a risk factor affecting musculoskeletal disorders is widely recognized, while the relation of this factor with the intensity of suffering among patients attending a physiotherapeutic clinic is a challenge waiting to be addressed.* ***Objectives***: *The aim of this study is to identify the scope of chronic low back pain, along with its relation to physical activity levels in the adult population attending a physiotherapeutic clinic.* ***Methodology***: *An observational study with a cross-sectional design will be carried out involving 150 adults ≥ 18 years with a complaint of low back pain of more than 12 weeks' duration. The information will be collected using a structured questionnaire evaluating the participants' demographics, intensity of suffering, functional limitations, and levels of physical activity. The individuals will be classified into groups according to the levels of physical activity: low, moderate, and high activity. The study will help assess using descriptive statistical methods the relation of physical activity levels with the mentioned clinical variables.* ***Results***: *The scope of moderate-to-severe chronic lower back pain was high among participants. Nearly 50 percent of participants had low levels of physical activity. Statistically significant relations were found among levels of physical activity, intensity of suffering, and functional limitations. Patients belonging to the lower activity group had higher chances of severe suffering, along with higher levels of functional limitations than the other groups ($p < 0.05$), respectively.* ***Conclusion:*** *Lower levels of physical activity are significantly correlated with higher intensity of suffering and higher functional limitations among adults seeking care within a physiotherapeutic clinic. Encouraging physical activity should form a central point of a treatment program offered by a physiotherapist*

Keywords: *Chronic low back pain; Physical activity; Physiotherapy; Functional limitation; Cross-sectional study.*

INTRODUCTION

Chronic low back pain (CLBP) represents one of the most common musculoskeletal disorders globally, as well as one of the major causes of persistent disability throughout the life-span of the affected populations. CLBP is generally described as pain or discomfort within the region that lies between the lower costal margins and the gluteal folds that lasts more than twelve weeks (1). In addition to the physical disability that CLBP causes, the impact that CLBP produces on the functional independence, work productivity, and psychological well-being of those affected also places an enormous socioeconomic burden on the healthcare system (2-4). A major body of evidence from large-scale epidemiologic studies suggests that low back pain accounts for a notable share of the disability-adjusted life-years lived by the working-age populations due to sitting, work activities, and unfavorable ergonomic conditions (1,2).

Physical activities are also well identified as primary determinants of musculoskeletal well-being and proper spine functionality. The proper performance of regular physical activities assists in promoting increased muscle strength and flexibility, effective neuromuscular mechanisms, and postural stability in the spine. In contrast, sedentary life and physical inactivity are perceived as direct correlates of conditions such as deconditioning and compromised spine support for increased vulnerability to CLBP. It has already been confirmed by previous systematic reviews and meta-analyses that individuals with regular physical activities experience

lower levels of pain and greater functions than those with sedentary life styles, and that physical activities are considered a potentially modifiable indicator in the prevention and management of CLBP (3).

Physiotherapy represents the primary approach under conservative treatment for CLBP, with strong focus placed on exercise physiotherapy, patient education, and behavior change techniques. Physiotherapy programs based on exercise aim at regaining mobility, improving muscular endurance, and maximising functional abilities regardless of pain problems. The findings of high-quality reviews provide strong evidence confirming the efficacy of physical activities and exercise programs for chronic pain intensity relief and physical functions improvement. Despite various evidence confirming the efficacy of physiotherapy programs for CLBP patients, most of them remain insufficiently active even while attending physiotherapy appointments. This is often due to fear avoidance patterns, fear of pain, low health literacy, and misconceptions about exercise-associated injury risk (4).

Whereas the link between physical activity and chronic low back pain has long been investigated in population-based studies, there is a relative dearth of clinic-based evidence from rehabilitation centers, especially in a regional or resource-scarce setting. Outpatient patients seeking physical therapy care may, in fact, represent a specific clinic-based population with a higher level of symptoms and a unique set of behaviors in comparison to the general population. It is important and essential to understand the prevalence of chronic low back pain and its link to the level of physical activity in a physical therapy clinic, which can be specifically tailored towards rehabilitation efforts. Cross-sectional studies are effective in filling this gap, which can yield current, clinic-related evidence on the burden of disease and the link with a corresponding set of behaviors at a moment in time (5,6)

Therefore, the purpose of the current study was to identify the prevalence of CLBP as well as investigate its relationship to levels of physical activity in adults attending physiotherapy centers. Through the examination of the pattern of physical activity in association with pain intensity and functional disability, the current study hopes to produce data that could enhance the establishment of physiotherapy programs specifically targeting the effective management of CLBP (7,8).

MATERIALS AND METHODS

The observational study aimed to determine the prevalence of chronic low back pain and its relationship to the level of physical activity among adults attending physiotherapy services. Data was collected from the Khan Rehabilitation Center in Muzaffargarh. The study was done after approval from the concerned authority of the institution. It adhered to the ethical guidelines used in human research (5). A cross-sectional study was used to determine the relationship between the exposure (level of physical activity) and the outcome (level of chronic low back pain).

With a total target population of 150 patients, the sampling technique adopted was convenience sampling. The target population included all patients who were 18 years and older, seeking treatment at the physiotherapy clinic, and were experiencing low back pain for more than 12 weeks. Excluded in the study were patients experiencing acute low back pain, history of spinal surgery, traumatic injury to the spine, inflammatory spinal disease, malignancy, or serious neurological conditions. For this study, the goal was to eliminate selection bias as an issue. All eligible patients were sought to participate in the study (9, 10).

A structured questionnaire with supervised administration to facilitate completeness and accuracy was used to collect data. Demographic information such as age, gender, occupation, and body mass index were documented as confounders in this study based on their association with low back pain outcomes identified through past studies (6). Chronic low back pain was operationalized based on self-reports to determine persistency and association with pain to the lumbar area for more than twelfty-two weeks. Pain intensity was grade based on self-administered assessment by adopting a pain measurement technique (7). In regard to functional impairment caused by low back pain, it was assessed based on pain's effects on daily functioning.

Levels of physical activity were determined with the help of a validated physical activity scoring system that evaluates the frequency, duration, and level of physical activity. On the basis of the systematic scoring system, the participants were divided into three groups—low, moderate, and high physical activity. This method of classification has been used widely in various studies that have investigated the association of physical activity with MSK health outcomes (8,9).

To eliminate any possible sources of bias, a uniform method of data collection was maintained for all subjects, and questionnaires were checked immediately after their completion to avoid any missing information. The possible sources of bias, including the confounding variables of 'age', 'sex', 'occupation', and 'body mass index', were controlled for during the process of data analysis. Double-checking of the computer-entry of data was performed for accuracy of the entered information and for avoiding integrity issues with the data. Inferential statistical tests were performed for determining possible correlations of the severity of chronic low back pain with levels of physical activity. The level of statistical significance was maintained at 'p=0.05'. The study was formally approved before its commencement, and all subjects maintained their privacy during the process of conducting the research work.

RESULTS

A total of 150 adults attending the physiotherapy clinic were used in the study analysis. The largest number of participants, as indicated in Table 1 above, represented those aged 31-45 years, accounting for 44.7%, followed by those aged 46-60 years, accounting for 30%, and those aged 18-30 years, accounting for 25.3%.

Male participants comprised 60.0% of the sample, while females made up 40.0%. Regarding occupational exposure, 42.7% of the participants had sedentary occupations, whereas 57.3% had occupations requiring more physical effort.

The distribution of severity of chronic low back pain can be viewed in Table 2. Nearly half of the respondents (47.3%) suffering from moderate pain, while 31.4% had severe pain. However, only 21.3% of respondents had mild pain symptoms. It can thus be understood that a large proportion of people suffering low back pain requiring physiotherapists' care had clinical significant pain intensity.

The level of physical activities recorded in the study is presented in Table 3. A total of 46.0% of the participants recorded low levels of physical activities, followed by 34.0% who recorded moderate levels, compared to just 20.0% who recorded high levels. The trend indicates a dominance of physical inactivity among the adults attending the physiotherapy clinic.

As shown in Table 4, a statistically significant relationship between physical activity levels and the severity of chronic low back pain exists (χ^2 p = 0.027). A significantly higher proportion of severe pain (42.0%) was reported by individuals with low physical activity levels compared to those with moderate and high physical activity levels (21.6% and 23.4%, respectively). The strength of association, as measured by Cramér's V, had a value of 0.191, which represented a small to moderate strength. Further analysis showed that individuals with low physical activity levels had a significantly higher risk of reporting severe pain compared with individuals with moderate activity levels (OR 2.64, 95% CI: 1.16-5.99) and individuals with combined categories of moderate and high physical activity levels (2.54, 95% CI: 1.25-5.16).

Table 1. Participant Characteristics (n = 150)

Variable	Category	n	%
Age (years)	18–30	38	25.3
	31–45	67	44.7
	46–60	45	30.0
Sex	Male	90	60.0
	Female	60	40.0
Occupation type	Sedentary	64	42.7
	Physically active	86	57.3

Table 2. Chronic Low Back Pain Severity Distribution (n = 150)

Pain severity	n	%
Mild	32	21.3
Moderate	71	47.3
Severe	47	31.4
Total	150	100.0

Table 3. Physical Activity Level Distribution (n = 150)

Physical activity level	n	%
Low	69	46.0
Moderate	51	34.0
High	30	20.0
Total	150	100.0

Table 4. Association Between Physical Activity Level and Pain Severity (n = 150)

Physical activity level	Mild n (%)	Moderate n (%)	Severe n (%)	Total n	p-value (χ^2 test)
Low	8 (11.6)	32 (46.4)	29 (42.0)	69	
Moderate	14 (27.5)	26 (51.0)	11 (21.6)	51	
High	10 (33.3)	13 (43.3)	7 (23.4)	30	
Overall association				150	0.027

Table 5 Focused effect estimates for "Severe pain" (Severe vs non-severe):

Comparison (reference)	Odds ratio (OR)	95% CI	p-value (Fisher's exact)
Low vs Moderate	2.64	1.16–5.99	0.020
Low vs Moderate High	2.54	1.25–5.16	0.013

Table 6. Association Between Physical Activity Level and Functional Limitation (n = 150)

Physical activity level	Mild limitation (n)	Moderate limitation (n)	Severe limitation (n)	Total n	p-value (χ^2 test)
Low	15	28	26	69	
Moderate	21	20	10	51	

High	18	9	3	30	
Overall association				150	0.0018

The association between functional limitations and physical activity is shown in Table 5. A correlation existed between the level of functional limitations based on physical activity ($p = 0.0018$). Severe functional limitations were found highest within the low physically active group (37.7%) compared with the moderate (19.6%) or high groups (10.0%).

The strength of this relationship was moderate, as indicated by a Cramér's V of 0.239. Those who reported low physical activity had a significantly increased odds of severe functional limitation in relation to those who reported moderate physical activity (OR 2.48, 95% CI 1.06–5.77) and both moderate and high levels of physical activity (OR 3.16, 95% CI 1.47–6.81).

Taken together, these results clearly show that lower levels of physical activity are strongly and significantly associated with increased levels of pain and functional limitation in individuals with chronic low back pain attending physiotherapy clinics.

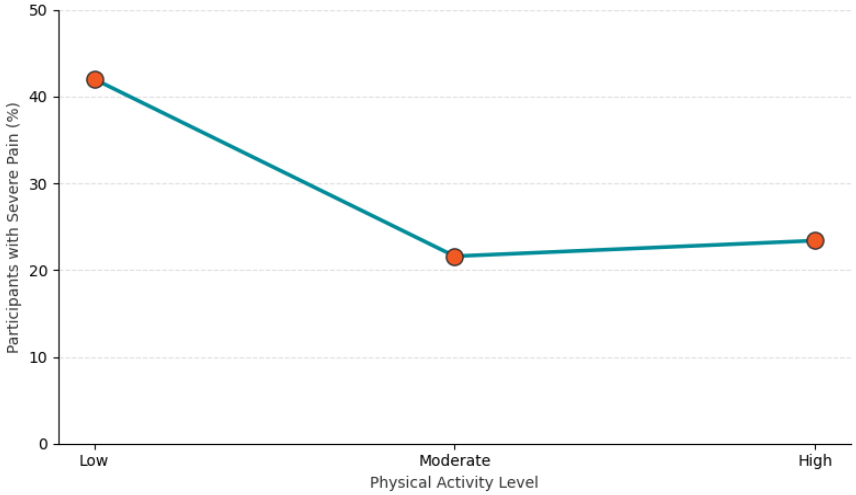

Figure 1 Gradient Decline in severe pain burden Across physical activity level

Among adults attending physiotherapy clinics, a pronounced inverse gradient was observed between physical activity level and the proportion of participants reporting severe chronic low back pain. The highest burden of severe pain was evident in the low physical activity group, where 42.0% of participants experienced severe symptoms, followed by a marked reduction in the moderate activity group to 21.6%. Although a slight increase was noted in the high activity group (23.4%), the overall pattern demonstrates a substantial decline in severe pain prevalence with increasing physical activity. This non-linear trend suggests that transition from low to at least moderate physical activity is associated with the greatest relative reduction in severe pain burden, reinforcing the clinical relevance of promoting activity engagement as part of physiotherapy-led management strategies for chronic low back pain.

DISCUSSION

Findings from this cross-sectional study have shown that there is a high prevalence of chronic low back pain among those who visit physiotherapy clinics, with most patients experiencing moderate to severe pain. This is similar to worldwide studies that have shown chronic low back pain to be among the major causes of disability and use of healthcare services, especially among those who are of working age (11). The reason why symptom burden is high among those who visit physiotherapy services may be attributed to delayed health care and occupational exposure.

One of the most salient outcomes of this research is the strong link that has been established between the level of physical activity and both the severity of pain and the degree of functional impairment. The group with low levels of physical activity showed a much higher proportion of severe pain and severe functional impairment relative to the other two groups of physical activity level. These results support previous research that has demonstrated the etiological role of physical inactivity in chronic pain by contributing to muscle deconditioning and spinal instability due to neuromuscular impairment (12, 13). The effect sizes for these outcomes were small to medium.

The reverse correlation between physical activity and the severity of chronic low back pain, as found in the current research, is in line with other systematic reviews and cohort studies conducted in the past. Higher levels of leisure-time physical activity were found to be a protective factor for the development of chronic low back pain, whereas sedentary activity was a contributing factor, as stated in a report by Shiri and Falah-Hassani (14). This is in line with other studies, as, in a research paper by Alzahrani et al., it was found that a lack of physical activity was linked with a greater prevalence and severity of low back pain in the general population.

Exercise-based physiotherapy programs are strongly advised in international treatment guidelines for the management of chronic lower back pain (15). Findings obtained from Cochrane reviews and clinical trials strongly suggest that engaging in physical activity and exercise can alleviate the perception of pain, increase functional ability, and improve quality of life in those with chronic

musculoskeletal pain conditions (16). However, a large percentage of today's study group were found to belong to the category of having low levels of physical activity, which underlines a gap between evidence and practice. Fear-avoidance models of chronic musculoskeletal pain, catastrophizing, and misperceptions of safe movement patterns have previously been demonstrated as physical activity-preventing factors in chronic pain sufferers (17).

The important association found to exist between low physical activity and severe functional limitation further emphasizes the importance of the promotion of activity within physiotherapy practice. Those participants who had low physical activity had over three times the odds of having severe functional limitation compared to those with greater activity levels, thereby indicating that not only does inactivity have an impact on pain perception but also limits one's functional ability. These study results are supported by previous work, which suggested that functional disability within chronic low back pain patients is significantly affected by non-structural pathology yet heavily dependent on both physical and psychosocial factors (18,19).

There exist a number of methodological points that should be noted in the interpretation of these results. Firstly, because this study utilizes a cross-sectional design, it is impossible to demonstrate causality, and it cannot be ascertained whether a lower level of physical activity increases pain severity or whether a higher level of pain reduces activity. Secondly, because the study utilizes self-report assessments, recall and/or reporting errors may exist. Nevertheless, utilizing standardized assessment techniques, a uniform method of data collection, and accounting for significant variables that may influence the endpoint improves the internal validity of this research study. Generalization of the study population may be difficult because of its clinic-based population; however, its relevance to physiotherapy interventions cannot be understated (20, 21).

In conclusion, the findings in this research highlight the key importance of physical activity in the presentation and functional effects associated with chronic lower back pain. The incorporation of patient education, graded activity exposure, as well as behaviorally informed exercise programs in physiotherapy practice or delivery can potentially alleviate the effects associated with chronic lower back pain (22).

CONCLUSION

In this cross-sectional analysis, a remarkably large proportion of patients with chronic LBP attended physiotherapy clinics, and a large proportion of patients had moderate-to-severe pain and functional impairment. The results of this observational cross-sectional analysis clearly indicated a markedly significant and clinically relevant positive association between physical activity levels and either pain severity and functional impairment, with progressively increasing pain severity and functional impairment in progressively fewer patients with progressively higher physical activity levels. Clearly, moderate-to-high physical activity levels were associated with a reduced burden of pain and improved functional status, thus asserting a markedly significant and clinically relevant positive protective association of physical activity against chronic LBP. These cross-sectional analysis results clearly suggest that increasing physical activity levels, as a novel and integral ingredient of physiotherapy, play a markedly significant and clinically relevant role in chronic LBP. Educating and promoting graded exercise and physical activity among physiotherapy patients might lead to a reduction in physical inactivity among patients with chronic LBP and thereby achieve a markedly significant and clinically relevant positive impact against chronic LBP and its related functional impairment and disability of patients attending physiotherapy clinics regularly.

REFERENCES

1. Hoy D, March L, Brooks P, Woolf A, Blyth F, Vos T, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. Ann Rheum Dis. 2014;73(6):968–74.

2. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, et al. Years lived with disability for 1160 sequelae of 289 diseases and injuries 1990–2010. Lancet. 2012;380(9859):2163–96.

3. Shiri R, Falah-Hassani K. Does leisure time physical activity protect against low back pain? A systematic review and meta-analysis of 36 prospective cohort studies. Br J Sports Med. 2017;51(19):1410–8.

4. Geneen LJ, Moore RA, Clarke C, Martin D, Colvin LA, Smith BH. Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews. Cochrane Database Syst Rev. 2017;(4):CD011279.

5. Airaksinen O, Brox JI, Cedraschi C, Hildebrandt J, Klaber-Moffett J, Kovacs F, et al. Chapter 4: European guidelines for the management of chronic nonspecific low back pain. Eur Spine J. 2006;15(Suppl 2):S192–300.

6. Balagué F, Mannion AF, Pellisé F, Cedraschi C. Non-specific low back pain. Lancet. 2012;379(9814):482–91.

7. Maher C, Underwood M, Buchbinder R. Non-specific low back pain. Lancet. 2017;389(10070):736–47.

8. van Tulder M, Becker A, Bekkering T, Breen A, del Real MT, Hutchinson A, et al. European guidelines for the management of acute nonspecific low back pain. Eur Spine J. 2006;15(Suppl 2):S169–91.

9. Hayden JA, van Tulder MW, Malmivaara AV, Koes BW. Exercise therapy for treatment of non-specific low back pain. Cochrane Database Syst Rev. 2005;(3):CD000335.

10. Searle A, Spink M, Ho A, Chuter V. Exercise interventions for the treatment of chronic low back pain: a systematic review and meta-analysis of randomised controlled trials. Clin Rehabil. 2015;29(12):1155–67.

11. Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. Lancet. 2018;391(10137):2368–83.

12. Katz JN. Lumbar disc disorders and low-back pain: socioeconomic factors and consequences. J Bone Joint Surg Am. 2006;88(Suppl 2):21–4.

13. Koes BW, van Tulder MW, Thomas S. Diagnosis and treatment of low back pain. BMJ. 2006;332(7555):1430–4.

14. Andersson GB. Epidemiological features of chronic low-back pain. Lancet. 1999;354(9178):581–5.

15. Hurwitz EL, Randhawa K, Yu H, Côté P, Haldeman S. The Global Spine Care Initiative: a summary of the global burden of low back and neck pain studies. Eur Spine J. 2018;27(Suppl 6):851–60.

16. Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. Lancet. 2018;391(10137):2356–67.

17. Pinto RZ, Ferreira ML, Refshauge K, Maher CG, Ferreira PH, Hancock M, et al. Risk factors for low back pain: a systematic review. Arthritis Care Res. 2014;66(3):451–62.

18. Alzahrani H, Mackey M, Stamatakis E, Zadro JR, Shirley D. The association between physical activity and low back pain: a systematic review and meta-analysis of observational studies. Eur Spine J. 2019;28(11):2594–605.

19. Booth FW, Roberts CK, Laye MJ. Lack of exercise is a major cause of chronic diseases. Compr Physiol. 2012;2(2):1143–211.

20. Hayden JA, Wilson MN, Riley RD, Iles R, Pincus T, Ogilvie R, et al. Individual recovery expectations and prognosis of low back pain: prognostic factor systematic review. J Pain. 2019;20(9):984–95.

21. Vlaeyen JW, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain. 2000;85(3):317–32.

22. Ferreira PH, Ferreira ML, Maher CG, Herbert RD, Refshauge K. Specific stabilisation exercise for spinal and pelvic pain: a systematic review. Aust J Physiother. 2006;52(2):79–88.