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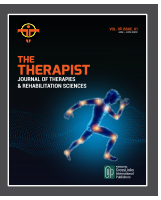

Original Article

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Association of Pain Intensity, Duration, and Aggravating Factors in Low Back Pain Patients

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ABSTRACT

A common musculoskeletal ailment that impairs everyday functioning and quality of life is low back pain. **Objective:** To investigate the association of pain intensity, duration, and aggravating factors with functional limitations in patients with low back pain. **Methods:** Due to logistical limitations, a convenience sample of 162 patients with low back pain below the Cochran-calculated minimum of 384 was used in a cross-sectional descriptive study at The University of Lahore Teaching Hospital. Individuals between the ages of 18 and 50 who had a positive SLR test were selected. A standardized questionnaire that covered demographics, pain characteristics, and the Back Pain Functional Scale (BPFS) was used to gather data.Shapiro-Wilk normality testing was used to report quantitative data as mean ± SD or median [IQR], and qualitative data as frequencies (%).While t-tests, Pearson's correlation, or Mann-Whitney U tests evaluated relationships between pain intensity and functional limitation, descriptive statistics provided a summary of demographics. Analysis was done using SPSS version 23.0, and significance was set at $p < 0.05$. **Results:** The majority of the 162 participants were women between the ages of 36 and 45. They often had moderate to severe agonising pain that got worse when they walked and in the morning, and the best relief came from rest and physical therapy. **Conclusions:** Functional ability and pain levels are greatly impacted by low back pain, especially in women. The most impacted activity was walking, and the best way to recover was to relax.

INTRODUCTION

Low Back Pain (LBP), a prevalent condition that affects people all over the world, is one of the most common complaints in primary care settings. Low Back Pain (LBP) can be caused by a number of variables, including skeletal, neurological, and musculoskeletal structures, and can be exacerbated by extended postures, physical strain, and age-related degenerative changes [1]. Chronic LBP, defined as pain lasting more than three months, poses significant challenges in clinical management due to its complex aetiology, which often includes non-specific pain, radiculopathy, and structural abnormalities including spinal stenosis or disc protrusion [2]. Magnetic resonance imaging or computed tomography scans are commonly used to determine particular causes of pain, but lumbar radiography is generally avoided during the first two months of nonspecific pain [3]. Chronic Low Back Pain (CLBP) is a debilitating and common condition that affects a significant fraction of the global population (619 million people in 2020, with estimates increasing to 843 million by 2050)[4]. According to the World Health Organisation, low back pain is one of the most prevalent impairments in the world, and it has a substantial financial impact due to medical costs and lost productivity. Up to 80% of people may experience low back pain at some point in their lives, and many will develop chronic symptoms that persist for more than three months [5]. The strain on the discs in the lower back may be more apparent if you spend a lot of time sitting down rather than standing. The majority of

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motorcycle riding is done while seated, and extended sitting can contribute to hamstring strains [4]. People may therefore be more susceptible to developing lower back pain (LBP). However, it's important to realise that not all riders get LBP as a result of prolonged sitting. Sensitivity to this disease is influenced by age, riding time, physical fitness, individual differences, and other factors [6]. Regaining lost range of motion, enhancing function, reducing pain, and enhancing quality of life are the main objectives of physiotherapy for individuals with LBP [7]. Numerous workouts, electrotherapy, and relaxation techniques are used to achieve these objectives [8]. In Pakistan, LBP is common among professionals, housewives, office workers, and students. It is widespread among bankers, pregnant women in their latter trimester, and professionals such as dentists. Additionally, studies have shown that many Pakistani women of reproductive age experience lower back pain [9]. The onset of CLBP is influenced by social, psychological, and physical factors. Common causes of this syndrome include age, inactivity, poor posture, and possible occupational hazards [4]. Beyond the obvious physical pain, Chronic Low Back Pain (CLBP) can cause substantial mental anguish, a decline in quality of life, and difficulties in going about one everyday activities [10]. Clinical practice continues to prioritize the appropriate care of CLBP due to its high prevalence and complex character [10, 11]. A multidisciplinary team using conservative and interventional methods works well to manage CLBP. Physical therapy, pharmaceutical therapies, and behavioral changes including exercise and weight control are examples of conservative treatments that are often used as a first line of defense Core strength training, flexibility exercises, and posture correction are common PT goals [12]. Drugs such as opioids, muscle relaxants, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), and analgesics may be used in pharmacological treatment [13]. Persistent pain and incapacity occur in many patients with CLBP, despite the diversity of therapies available [14]. Because conventional treatment has its limitations, people are looking for complementary and alternative medicine alternatives that can help them feel better for longer [15]. Low back pain can affect functional limits differently in acute, subacute, and chronic versions. Low back pain is a major contributor to functional impairment and a reduced quality of life, and it is one of the primary causes of disability globally. Although it is very common, little is known about the relationship between functional limitation and pain intensity in Pakistani people. To create focused and effective rehabilitation techniques, it is vital to comprehend this relationship.

This study aimed to examine the relationship to explore the association of pain intensity, duration, and aggravating factors with functional limitations in patients with low back pain.

METHODS

Using a convenient sampling technique, 162 participants participated in this cross-sectional descriptive study.The study was conducted from March 2024- July 2024.The University of Lahore Teaching Hospital in Lahore provided the data, and the study was finished four months after the summary was approved 162 people with low back pain were included in the sample. Participants had to be between the ages of 18 and 50, be of either gender, be recommended from the orthopedic department, have a positive Straight Leg Raise (SLR) test, and score at least 5 on the Numeric Pain Rating Scale in order to be eligible.The Straight Leg Raise (SLR) test is used to assess nerve root irritation.An indication that a nerve root in the lumbar spine (typically L4-1) is compressed is when discomfort may radiate down the leg between 30 and 70 degrees Celsius of hip flexion. Only those having positive SLR test results were included in the study. Those with inflammatory conditions such as rheumatoid arthritis, neurological symptoms like cognitive impairments, a history of spinal surgery between thoracic vertebra 12 (T12) and sacral vertebra 1 (S1), or a history of spinal fractures, tumors, or infections were not allowed to participate.The study also excluded women who were either pregnant at the time of the study or in the first six months after giving birth. The Back Pain Functional Scale (BPFS) was used in the study to evaluate low back pain patients' functional limitations and pain perception.The questionnaire was broken up into sections that addressed functional activity levels, pain characteristics, and demographic data. A 0–5 Likert scale was used to score functional limits in 12 daily tasks, and a 0–10 scale was used to record pain intensity. To standardize the measurement of functional impairment, the entire BPFS score which ranges from 0 to 60 was computed and then transformed into a percentage. This approach made it possible to thoroughly assess the degree of discomfort and how it affected the participants' day-to-day functioning. The pain visual analogue scale is a unidimensional measure of pain intensity, used to record patients' pain progression, or compare pain severity between patients with similar conditions. A straight horizontal line with a fixed length, often 100 mm, is the most basic VAS. The ends are defined as the extreme limits of the parameter to be measured (symptom, pain, health) orientated from the left (worst) to the right (best) [16]. BPFS is a subjective tool assessing physical function within the first two weeks of LBP. It consists of 12 items scored on a Likert scale (0-5): unable to perform the activity (0), extreme difficulty (1), quite a bit of difficulty (2), moderate difficulty (3), a little bit of difficulty (4), and no difficulty (5). The total score (0-60) is calculated by summing the responses, with higher scores indicating

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better function. The adjusted score (Total/60) provides a percentage measure of functional ability. BPFS has good reliability and validity, correlating well with other functional scales, making it useful in clinical practice. However, it is not used for chronic cases. Further research is needed to assess its sensitivity over time and applicability to a larger population [17]. Analysis was done using SPSS version 23.0, and significance was set at $p < 0.05$.

RESULTS

The study included 162 participants with low back pain, the majority of participants (58.6%) were between the ages of 36–45 years, followed by 37.0% in the 26–35 years age group. Only 4.3% were between 46–50 years. Regarding gender distribution females represented a larger proportion of the sample (63.6%) compared to males (36.4%). Presents the distribution of the duration of low back pain. Acute pain (<6 weeks) was reported by 42.0% of participants, 19.8% experienced subacute pain (6–12 weeks), and 38.3% had chronic pain lasting more than 12 weeks. In terms of pain type, the most common type reported was aching (46.9%), followed by burning pain (29.0%), dull pain (14.2%), sharp pain (9.3%), and throbbing pain (0.6%). Factors that worsened pain are summarized in, where walking was the most frequently reported aggravating activity (40.1%), followed by standing (22.8%), bending (20.4%), and sitting for long periods (16.7%). Conversely, shows that physical therapy was the most effective relieving factor (34.0%), followed closely by rest (31.5%) and medication (19.8%). Notably, 14.8% of participants reported no relief from any method. As seen in pain variation throughout the day was also assessed. About 42.0% of participants reported worsening pain in the morning, while 19.8% experienced more pain at night. A significant portion (38.3%) indicated that their pain remained constant throughout the day. Functional limitations were evaluated using the Back Pain Functional Scale (BPFS), The BPFS scores ranged from 9 to 56, with a mean score of 32.32 ± 11.99, indicating moderate functional impairment in most participants. Pain intensity, measured on a Numeric Pain Rating Scale, is summarized in Table 9. Scores ranged from 5 to 10, with a mean of 7.56 ± 1.27, reflecting moderate to severe pain among the study population.

In table 1 most participants were females (63.6%) aged 36–45 years (58.2%).

Table 1: Demographic Characteristics of Participants (n = 162)

Variable	Category	Frequency (%)
Age	26–35 years	60 (37.3)
	36–45 years	95 (58.2)
	46–50 years	7 (4.7)
Gender	Male	59 (36.4)
	Female	103 (63.6)

Most participants reported aching pain (46.9%), acute duration (<6 weeks, 42.0%), pain aggravated by walking (40.0%), relieved by physiotherapy (34.0%), with BPFS scores ranging from 9 to 56 (Table 2).

Table 2: Descriptive Statistics LBP (n=162)

Variable	Frequency (%)	
Duration of LBP		
Acute (<6 weeks)	68 (42.0)	
Subacute (6-12 weeks)	32 (19.8)	
Chronic (>2 weeks)	62 (38.3)	
Pain Type		
Sharp	15 (9.3)	
Dull	23 (14.2)	
Aching	76 (46.9)	
Burning	47 (29.0)	
Throbbing	1 (0.6)	
Factors for worse pain		
Sitting for long period	27 (16.7)	
Standing	37 (22.8)	
Walking	63 (40.0)	
Bending	33 (20.4)	
Factor for relieve pain		
Rest	51 (31.5)	
Medication	32 (19.8)	
Physiotherapy	55 (34.0)	
None	24 (14.8)	
Back pain functional	**Min**	**Max**
Scale	9	56

In figure 1 the bar chart shows that acute low back pain (<6 weeks) was most common (41.98%), followed by chronic (>2 weeks, 38.27%) and subacute (6–12 weeks, 19.75%).

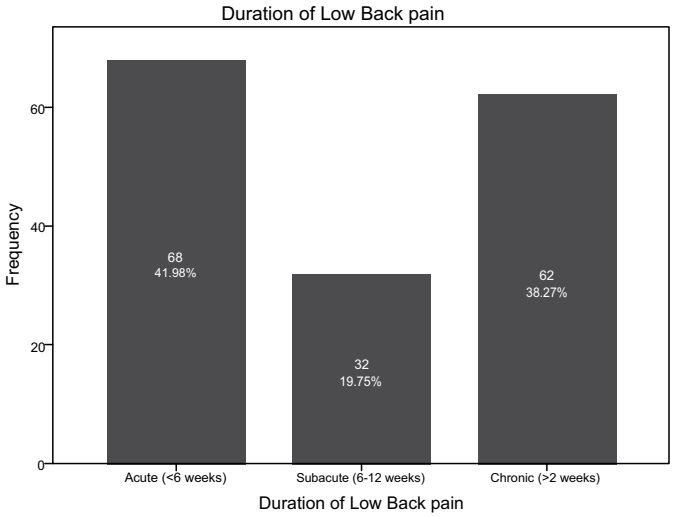

Figure 1: Distribution of Pain Intensity on the Numerical Pain Rating Scale

In figure 2 walking was the most reported aggravating factor for pain (40.12%), followed by standing (22.84%), bending (20.37%), and sitting for long periods (16.67%).

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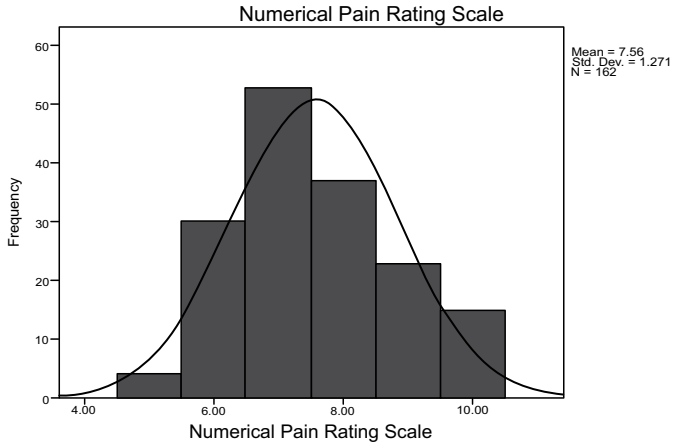

Figure 2: Aggravating Factors Associated with Low Back Pain

In figure 3 a normally distributed pattern of pain intensity scores on the Numerical Pain Rating Scale, with a mean of 7.56 ± 1.27, indicating moderate to severe pain among participants.

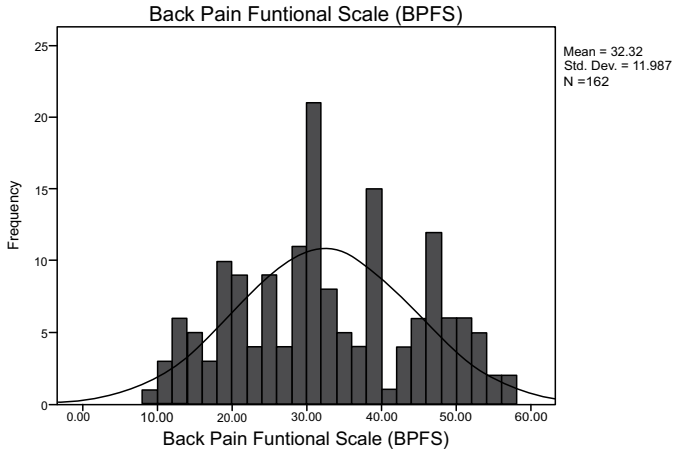

Figure 3: Distribution of Back Pain Functional Scale (BPFS) Scores Among Participants

In figure 4 a normal distribution of pain scores, with a mean of 7.56 ± 1.27, indicating moderate to severe pain.

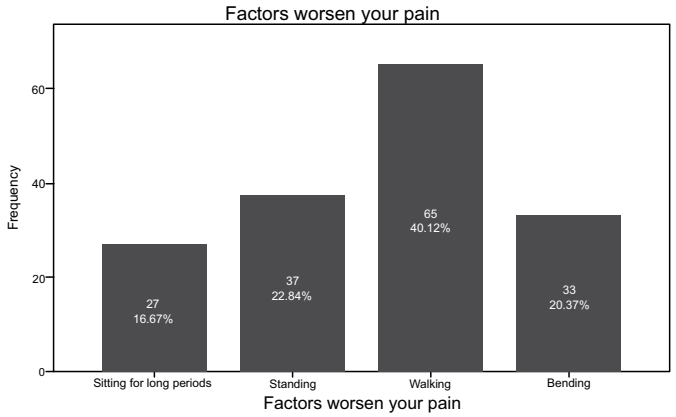

Figure 4: Normal Distribution of Pain Scores Indicating Moderate to Severe Pain

DISCUSSION

Most of the patients with persistent low back pain reported moderate to severe pain and significant physical restrictions. The degree of pain, especially psychological and bodily discomfort, was negatively correlated with quality of life.Poor quality of life was also strongly associated with functional limitations. QOL was also significantly influenced by pain severity, intensity, and impairment [18, 19].Previous studies have assessed the relationship between QOL and these variables among people with chronic low back pain (CLBP) [20-22]. Participants in the current study frequently reported moderate to severe pain and significant functional limitations, which is in line with earlier research by Aminde *et al.*, and Mutubuki *et al.*, that showed pain severity and disability to be significant factors in lower quality of life in people with CLBP [19, 18].These findings highlight the necessity of all-encompassing pain and physical function management techniques [22].Standardized instruments were used to measure the degree of disability and pain experienced by people with low back pain. The Back Pain Functional Scale (BPFS), a valid and dependable instrument for evaluating function in individuals with back pain, was used to evaluate functional limitations [17].Pain intensity was measured using the Visual Analogue Scale (VAS), a validated 10-point scale ranging from 'no pain' to 'worst pain' [16].The use of these tools in this study facilitated a comprehensive understanding of the relationship between pain, disability, and functional limitation [17, 22].According to the mean pain score and BPFS values, participants reported functional restrictions and moderate to severe pain levels.These results are consistent with earlier studies that found a negative correlation between pain intensity and quality of life [18, 22]. Similar to previous research, these findings imply that people with higher levels of pain and functional disability are probably less capable physically and have a lower quality of life [18–20].The significant effect of pain on mobility, especially walking difficulty, supports previous findings that physical function is a major driver of quality of life in people with low back pain, even though this study did not explicitly measure physical activity levels[22].

CONCLUSIONS

Low back discomfort has a significant effect on both pain and functional limitation. The findings indicated that more affected females had moderate to severe discomfort and difficulty walking. The best form of relief following physical therapy was rest. These results will be helpful in emphasizing the value of early assessment and targeted treatments for pain control and the enhancement of functional limitations.

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Authors Contribution

Conceptualization: SS
Methodology: AT, SS, ST, RMA, TA
Formal analysis: AT, SS, ST, RMA, TA
Writing, review and editing: AT, SS, ST, RMA, TA

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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