ORIGINAL ARTICLE

LOW BACK PAIN IN GERIATRIC PATIENTS: CLINICAL FEATURES, CAUSES, AND MANAGEMENT OPTIONS

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Abstract

Introduction: This study aimed to determine the prevalence of low back pain and to characterize its clinical features, causes, and treatment options among geriatric patients at a tertiary hospital.

Materials and Method: This single-center, cross-sectional study retrospectively reviewed the medical records of patients aged ≥65 years who presented to the physical medicine and rehabilitation clinic at a tertiary hospital with low back pain. The clinical characteristics, causes, and treatment methods for low back pain were documented.

Results: Data from 103 older patients were analyzed. Low back pain accounted for 19.5% of geriatric visits to tertiary hospitals. Red flags were detected in 36.2% of women and 11.8% of men (p = 0.009). Among all the pain cases, the causes were mechanical in 46.6% (n = 48), radicular in 27.2% (n = 28), specific pathology in 14.6% (n = 15), and persistent spinal pain syndrome type 2 in 11.7% (n = 12). A statistically significant association was found between the causes of acute low back pain and sex (p = 0.003). Specific pathologies were significantly more prevalent in women, whereas radicular pain was more prevalent in men. The most commonly used treatments for low back pain were pharmacological and physical therapies.

Conclusion: Low back pain is common in geriatric patients, with mechanical causes being the most prevalent. Older patients should be screened for red flags, and specific pathologies affecting women should be considered.

Keywords: Low Back Pain; Aged; Radiculopathy.

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INTRODUCTION

Low back pain (LBP) is common across all age groups, from children to older adults (1), and is among the most frequently reported symptoms in primary healthcare settings (2). A recent review found that 21%–75% of people aged ≥60 had experienced LBP in the past year (3). Compared with young adults, older adults with LBP experience greater disability and reduced mobility. They are also more likely to recover more slowly and to have poorer outcomes (4). With one in six people worldwide expected to be aged ≥60 years by 2030 (5), the burden of LBP is expected to increase.

LBP may be mechanical/nonspecific (involving the intervertebral disc, facet joint, vertebral body, sacroiliac joint, or muscle fascia ligament), radicular (disc herniation or spinal stenosis), or due to a specific pathology (spondyloarthropathy, compression fracture, malignancy, infection, or cauda equina syndrome) (1,6). Approximately 90% of LBP cases in the general population are mechanical in origin (7). However, the diagnostic process for LBP remains controversial. Diagnostic rates reported in the literature are based on patients presenting to primary care, whereas some researchers have argued that mechanical LBP can be subclassified using findings from clinical evaluations and diagnostic imaging (8).

Furthermore, a review investigating the prevalence of LBP in the geriatric population found that the condition was defined differently in the examined studies, resulting in varying prevalence rates depending on the definition used (3). Although LBP is prevalent in older adults, it is often not properly treated. One possible explanation is the difficulty in identifying the cause of LBP (9). Further scientifically accurate research using a standardized definition of LBP is needed to contribute to the development of preventive actions for those affected by LBP in the older population and reduce disability. Therefore, this study aimed to determine the prevalence of LBP and its clinical features, causes, and treatment options among older patients who visited the outpatient clinic for physical medicine and rehabilitation at a tertiary hospital.

MATERIALS AND METHOD

This was a single-center, cross-sectional study. This study was approved by the Ethics Committee of Hasan Kalyoncu University (decision number 2026/063) and was conducted in accordance with the principles of the Declaration of Helsinki. Due to the retrospective nature of the study, the requirement for informed consent was waived.

The data required for the study were obtained by retrospectively reviewing the medical records of patients aged ≥65 years who presented with LBP at the Physical Therapy and Rehabilitation Outpatient Clinic at the Adıyaman Training and Research Hospital from January 1 to December 30, 2025. A physical medicine and rehabilitation physician with 10 years of professional experience evaluated the study participants. The inclusion criteria for the study were as follows: age ≥65 years, presenting with symptoms of LBP, and having complete medical records. The exclusion criteria for the study were incomplete patient medical records, age <65 years, and age ≥65 years with a neurological disease that could lead to difficulty in walking, lower-extremity weakness, cognitive dysfunction, and generalized body pain accompanying LBP. The number of outpatient clinic visits on specified dates was recorded. The total number of geriatric visits was recorded after excluding health board visits and patients aged <65 years. Visits with ICD-10 codes not associated with LBP and recurring visits were excluded, and the total number of geriatric patients with LBP was recorded. The initial visits of older patients with recurring visits due to back pain were examined. Medical records were examined for patients aged ≥65 years who had been diagnosed with one of the following ICD-10 codes: M51.9 (intervertebral disc disorder); M51.1 (lumbar and other intervertebral disc disorder with radiculopathy); M54.5 (low back pain); M48.06



(spinal stenosis in the lumbar region); M43.17 (spondylolisthesis in the lumbosacral region); and S32.00 (lumbar vertebral fracture). LBP was defined as pain in the area between the lower rib margins and the lower hip creases, with or without pain radiating down the leg (10). Demographic data of patients who met the inclusion criteria were recorded. The following data were recorded for each patient: clinical features (location and duration of back pain, history of back surgery, presence of risk factors, gabapentinoid use, and concomitant diseases), the cause of back pain, and treatment methods used to alleviate it. Patients taking medications for depression or anxiety disorders at a psychiatric clinic was categorized as having a psychiatric disorder.

Clinical features: LBP was classified as localized if it was located between the lower costal margins and the hip creases. If it was accompanied by leg pain extending below the knee, it was classified as radiating pain. LBP with a sudden onset lasting less than four weeks was recorded as acute, pain lasting between four and 12 weeks as subacute, and pain lasting > 12 weeks as chronic LBP (11). Red flags included a history of trauma, malignancy, osteoporosis, immunodeficiency, corticosteroid use, intravenous or immunosuppressive drug use, a temperature of ≥38°C, nocturnal pain, lower extremity weakness, saddle-type anesthesia, difficulty walking, bladder and bowel dysfunction, sudden unexplained weight loss, night sweats, and inflammatory LBP (6).

Causes of LBP: The causes of LBP were recorded based on pain characteristics, physical examination findings, and imaging (magnetic resonance imaging and lumbar radiography) findings, as shown in Table 1 (1,6,10,12).

Management: The management of LBP in geriatric patients involves pharmacological treatment, physical therapy, and spinal injections in cases that do not respond to conservative

Table 1. Classification of causes of low back pain according to clinical characteristics

Causes of low back pain	Clinical features
Radicular pain	
Lumbar disc herniation	Acute or insidious onset, low back and unilateral leg pain, dermatomal spread of pain, pain worsening with coughing or sneezing, positive straight leg raise test, and presence of disc herniation on magnetic resonance imaging (MRI) findings.
Spinal stenosis	Insidious onset, leg pain more prominent than low back pain, bilateral symptoms, presence of neurogenic claudication, increased walking distance in lumbar flexion, positive MRI findings.
Specific pathology	
Vertebral fracture	Acute onset, presence of red flags (trauma, steroid use, osteoporosis), and vertebral compression observed on radiographic or MRI findings.
Malignancy	Weight loss accompanied by pain, and imaging findings consistent with metastasis.
Infection	Acute onset, fever accompanied by lower back and back pain, and the presence of spinal infection observed on MRI.
Cauda equina syndrome	Bilateral severe radicular pain with low back pain, a new onset of saddle anaesthesia, bladder or bowel dysfunction
Spondyloarthritis	Inflammatory back pain, history of axial spondyloarthritis
Intra-abdominal causes	Pain originating from vascular, renal, and gastrointestinal systems.
Mechanical pain	LBP and/or non-dermatomal thigh pain, absence of specific pathology and radicular pain.
Persistent Spinal Pain Syndrome type 2	Chronic spinal pain that persists after spinal surgery

treatment (13). Pharmacological treatment involves the administration of oral non-steroidal anti-inflammatory drugs and topical medications. Physical therapy consists of electrotherapy including transcutaneous electrical nerve stimulation (TENS), thermotherapy (superficial and/or deep heating), and a core stabilization exercise program (home exercise program). An algologist administered the spinal injections. Patients diagnosed with an infection or malignancy were referred to the appropriate specialty, such as neurosurgery, infectious disease, or oncology.

All statistical analyses were conducted using IBM SPSS Statistics (version 22.0; IBM Corp., Armonk, NY, USA). Normality of continuous variables was determined using skewness and kurtosis. Normally distributed continuous variables are presented as means and standard deviations, and categorical variables as percentages and numbers. We compared LBP characteristics by sex and by the presence of red flags using the chi-squared test or Fisher's exact test. Statistical significance was set at $p < 0.05$.

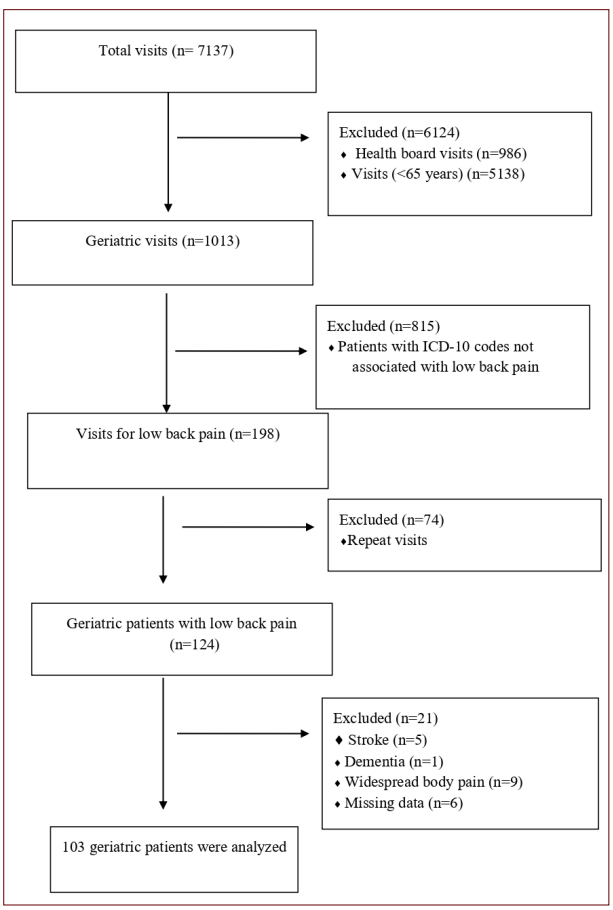


Figure 1. Flow chart of the study

RESULTS

Figure 1 presents a flowchart of the study. Data from 103 patients who met the inclusion criteria were analyzed. LBP accounted for 19.5% of the geriatric visits to tertiary hospitals.

Table 2 shows the clinical characteristics of the geriatric patients. Sixty-seven percent of geriatric

Table 2. Clinical characteristics of geriatric patients

	n	%
Age, year	72.4 ± 5.6	
BMI, kg/m^2	28.7 ± 4.7	
Sex		
Women	69	67
Men	34	33
Chronic diseases		
Diabetes mellitus	27	26.2
Hypertension	40	38.8
Psychiatric disorder	19	18.4
Coronary artery disease	10	9.7
Hepatitis B	4	3.9
Rheumatoid arthritis	3	2.9
Chronic kidney failure	1	0.9
Celiac disease	1	0.9
Use of gabapentinoids		
Yes	32	31.1
No	71	68.9
Spinal Surgery History		
Yes	15	14.6
No	88	85.4

BMI: Body mass index. Age and BMI are given as mean ± standard deviation.



patients were women. Before presenting to the clinic, 31.1% (n = 32) of patients were taking gabapentinoids. None of the patients were administered opioids. For patients with a history of spinal surgery, the median time since the last surgery was six months (range, 2–300 months). All 15 patients who underwent lumbar spinal surgery were operated on at age ≥65 years, except for one patient. Two patients underwent lumbar spinal surgery four times, one patient underwent surgery three times, and one patient underwent surgery two times.

Among patients with LBP, cases were classified as acute (n = 22; 12.6%), subacute (n = 13; 12.6%), and chronic (n = 68; 66%). Table 3 outlines the characteristics of LBP in geriatric patients. Red flags were present in 28.2% of patients (36.2% of women and 11.8% of men). A statistically significant association was found between red flags and sex (χ^2 = 6.741, p = 0.009). Four patients had more than one red flag. Osteoporosis and trauma were most common red flags. Among patients with LBP, 46.6% (n = 48) had mechanical pain, 27.2% (n = 28) had radicular pain, 14.6% (n = 15) had a specific pathology, and 11.7% (n = 12) had persistent spinal pain syndrome type 2 (PSPS II). None of the patients were diagnosed with cauda equina syndrome or axial spondyloarthritis. However, a statistically significant association was found between the cause of acute LBP and sex (χ^2 = 11.356, p = 0.003, Cramer's V = 0.718). Specific pathologies were more prevalent in women, whereas radicular pain was more prevalent in men. No association was found between subacute or chronic LBP causes and sex (χ^2 = 7.411, p = 0.060). A statistically significant association was found between red flags and LBP causes (χ^2 = 19.170, p < 0.001, Cramer's V = 0.431) (Table 4). The most commonly used methods of LBP management included pharmacological treatments and physical therapy.

Table 3. Comparison of low back pain characteristics in geriatric patients according to sex

	Women n (%)	**Men n (%)**	**p**
Localization			
Localized low back pain	49 (71)	14 (41.2)	0.003
Radiating pain	20 (29)	20 (58.8)	
Red flags			
Yes	25 (36.2)	4 (11.8)	0.009
No	44 (63.8)	30 (88.2)	
Red flags identified (n=33) *			
Osteoporosis	15 (51.7)	1 (25)	
Trauma	7 (24.1)	1 (25)	
Lower extremity weakness	2 (6.8)	2 (50)	
Glucocorticoid use	2 (6.8)		
History of malignancy	1 (3.4)		
Weight loss	1 (3.4)		
Fever	1 (3.4)		
Low back pain causes			
Acute low back pain (n=22)	18 (81.8)	4 (18.2)	
Radicular			0.003
Lumbar disc herniation	1 (5.6)	3 (75)	
Specific pathology	12 (66.7)	0 (0)	
Compression fracture	8 (66.6)		
Malignancy	1 (8.3)		
Spondylodiscitis	1 (8.3)		
Herpes zoster	1(8.3)		
Intra-abdominal causes	1(8.3)		
Mechanical low back pain	5 (27.8)	1 (25)	
Subacute and chronic low back pain (n=81)	51 (63)	30 (37)	
Radicular			0.060
Lumbar disc herniation	5 (9.8)	3 (10)	
Spinal stenosis	8 (15.6)	8 (26.6)	
Specific pathology			
Malignancy	0 (0)	1 (1.9)	
Intra-abdominal causes	1 (1.9)	1 (3.3)	
Mechanical low back pain	32 (62.7)	10 (33.3)	
Persistent Spinal Pain Syndrome Type 2	5 (9.8)	7 (23.3)	
Treatment options			
Pharmacological treatment	38 (51.1)	15 (44.1)	0.669
Physical therapy	17 (24.6)	12 (35.3)	
Spinal injection	9 (13)	5 (14.7)	
Referral to the relevant specialty	5 (7.2)	2 (5.9)	

*4 patients have more than one red flag, p-values are derived from Chi-square text analysis.

Table 4. Comparing the causes of back pain according to the presence of red flags

Low back pain causes	Red flags Yes n (%)	Red flags No n (%)	p
Radicular	5 (17.2)	23 (31.1)	
Specific pathology	11 (37.9)	4 (5.4)	<0.001
Mechanical	12 (41.4)	36 (48.6)	
Persistent Spinal Pain Syndrome Type 2	1 (3.4)	11 (14.9)	

p-values are derived from Chi-square test analysis.

DISCUSSION

This study investigated the prevalence of LBP, clinical characteristics of patients with LBP, causes of LBP, and treatment methods used in clinical practice among older patients who presented to a tertiary hospital. These characteristics were compared by sex. The study found that the prevalence of LBP among geriatric patients visiting a physical therapy outpatient clinic was 19.5%. Red flags were detected in approximately one-third of the patients and were more common among women. Although specific pathologies are the most common causes of acute LBP, mechanical LBP is the most common cause of both subacute and chronic LBP. A relationship was found between the causes of acute LBP and sex: specific pathologies were more prevalent in women, whereas radicular causes were more prevalent in men. Unlike previous studies conducted among community-dwelling older adults or older individuals presenting to primary healthcare settings, our study contributes to the literature by investigating the prevalence of LBP, its underlying causes, and management strategies in geriatric patients presenting to a tertiary care hospital.

Certain limitations of this study should be considered when interpreting the results. The small sample size and single-center retrospective design may have limited the generalizability of our findings. Components of comprehensive geriatric assessment, such as functional status, sarcopenia, quality of life, and frailty, could not be assessed. Although the preferred approaches for managing LBP are well-known, their efficacy and long-term outcomes have not yet been evaluated. Finally, mechanical LBP was not further classified as disc-, facet joint-, or sacroiliac joint-related.

Globally, the prevalence, incidence, and disability-related life expectancy associated with LBP are higher in women than in men. In addition, LBP prevalence is significantly higher in older adults than in younger adults (14). A study of on-site visits found that 52.1% of older Brazilian adults experienced LBP (15). Yağcı et al. conducted face-to-face interviews with older individuals aged 65–85 living at home in Denizli Province and found that 60.4% experienced LBP (16). Unlike previous studies, our study investigated the prevalence of LBP among geriatric patients presenting to a tertiary hospital and found that approximately one in five older patients presented with LBP. Because LBP is common among older adults and accounts for a considerable number of visits to tertiary care hospitals, routine screening for LBP should be included in comprehensive geriatric assessments.

Red flags are signs and symptoms identified during a patient examination that may indicate an underlying spinal pathology. According to Enthoven et al., the most common red flags in older adults presenting with LBP include long-term corticosteroid use, trauma, and osteoporosis (17). A recent Cochrane review reported that the red flags most commonly associated with vertebral fractures are corticosteroid use, advanced age (>70 years),



and trauma (18). In our study, red flags were present in approximately one-third of patients with LBP. The most common red flags were osteoporosis and trauma, which is consistent with previous reports. The greater frequency of red flags in women may be explained by the higher prevalence of osteoporosis in this population. In clinical practice, older adults presenting with LBP should be routinely screened for red flags, particularly trauma and osteoporosis. Given the association between these red flags and specific underlying pathologies, a comprehensive and detailed assessment is warranted.

Common causes of LBP in geriatric patients include structural changes and deformities from osteoarthritis, vertebral body and disc-related changes, secondary nerve compression, and sarcopenia (19). Traeger et al. estimated the prevalence of these causes of LBP among people aged ≥60 years who sought primary care services as 5–10% for lumbar disc herniation, 3–5% for spinal stenosis, 0.7–5% for vertebral fracture, 0.6% for malignancy, <0.1% for infection, <0.1% for cauda equina syndrome, and 60–90% for mechanical LBP (20). Unlike previous studies, this study examined the causes of LBP in geriatric patients treated at tertiary hospitals. Our findings suggest that the prevalence of mechanical LBP among older patients is lower than that reported in the literature, whereas the prevalence of radicular and specific pathologies is higher. This discrepancy may be due to expert assessment and combined interpretation of clinical and radiological images. Among patients with acute LBP, specific pathologies were significantly more prevalent in women than in men, whereas radicular causes were significantly more prevalent in men. The association of red flags with specific pathologies supports this finding. In clinical practice, clinicians providing tertiary care should consider specific and radicular pathologies when evaluating LBP in older patients. PSPS II is defined as persistent, worsening, or recurrent LBP with or without radiating leg pain following successful lumbosacral spine surgery (12). A recent cohort study of 530,644 patients reported that PSPS II occurred in 25.6% of patients within one year after spinal surgery. The study also found that female sex and advanced age were associated with PSPS II (21). Jin et al. reported that 35.6% and 21.5% of 1,065 older individuals experienced chronic pain 3 and 6 months after spinal surgery, respectively (22). In the present study, we found that four of five geriatric patients who underwent spinal surgery were diagnosed with PSPS II, a higher percentage than that reported in previous studies. This difference may reflect a smaller sample size or more frequent outpatient visits among patients with persistent postsurgical pain. In clinical practice, older adults who have undergone spinal surgery should be closely monitored for PSPS II.

To manage spinal pain in older adults, acetaminophen and non-steroidal anti-inflammatory drugs (NSAIDs) are recommended for myofascial and arthritic complaints, whereas gabapentinoids are recommended for radicular and neuropathic pain. Although opioids should generally be avoided because of their side effects, weak opioids, such as tramadol, may be preferable in some cases (23). In our study, we recommended pharmacological treatment and prescribed NSAIDs to one of every two geriatric patients with LBP. Notably, none of the patients were using opioids. This may indicate that physicians do not prefer these drugs for older adults because of their side effects. Physical therapy modalities can reduce pain and improve functionality when additional pharmacological treatment is not suitable owing to side effects, particularly in cases of multimorbidity and polypharmacy in geriatric populations (24). Approximately one-third of participants were recruited through a physical therapy program. Our findings suggest that non-opioid pharmacological treatments are preferred for treating LBP in older individuals, whereas physical therapy is used less frequently. Nevertheless, clinicians should prioritize rehabilitation programs for older patients to reduce

polypharmacy and drug-related adverse effects. Curatolo et al. reported that older adults with radicular pain are unlikely to benefit from long-term epidural steroid injections (25). Our current findings showed that one in ten older adults with LBP received spinal injections. However, due to the retrospective nature of our study, we were unable to assess the outcomes of these injections.

Clinical implications and future directions

These findings have important clinical implications. Because nearly one-fifth of geriatric outpatient visits to tertiary physical medicine and rehabilitation clinics are related to LBP, routine assessment of LBP should be part of a comprehensive geriatric evaluation. This vulnerable population should be carefully screened for red flags, particularly trauma and osteoporosis. Clinicians should be aware that, in older adults presenting with acute LBP, specific pathologies are more common in women, whereas radicular causes are more common in men. Women should be evaluated for compression fractures. Because geriatric patients often use NSAIDs, clinicians should be aware of gastrointestinal and renal complications, and prescribe these medications at the lowest therapeutic dose to avoid chronic use.

To optimize the management of LBP in the rapidly growing older population, future prospective multicenter studies should investigate the effectiveness of non-pharmacological and interventional treatment strategies and their effects on disability, quality of life, and healthcare utilization among geriatric patients. Additionally, identifying risk factors and long-term surgical outcomes associated with PSPS II in geriatric patients will aid in the development of preventive strategies.

Conclusion

LBP is a major reason geriatric patients visit tertiary care facilities. The frequent occurrence of red flags associated with specific pathologies underscores the importance of thorough clinical evaluation of geriatric patients presenting with LBP. Compression fractures should be considered in cases of acute LBP, and patients should undergo evaluation using advanced imaging techniques.

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