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# CORRELATION BETWEEN LUMBAR SPINE MRI FINDING AND CLINICAL SEVERITY AMONG PATIENTS WITH SCIATICA

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## Abstract

Sciatica is a common musculoskeletal disorder characterized by radiating pain along the sciatic nerve, most frequently caused by lumbar disc pathology. Magnetic resonance imaging (MRI) is the preferred imaging modality for evaluating lumbar spine abnormalities; however, the relationship between MRI findings and clinical severity remains controversial. Therefore, the study is conducted to determine the correlation between MRI findings and the clinical severity of sciatica in patients with lumbar spine disorders. The current cross-sectional analytical study was conducted on 138 patients with clinically diagnosed sciatica. Clinical data, including demographic characteristics, symptom duration, pain characteristics, pain intensity, aggravating and relieving factors, and neurological symptoms, were collected using a structured questionnaire. MRI findings, including disc pathology, level of involvement, nerve root compression, spinal canal stenosis, foraminal narrowing, and disc degeneration, were evaluated. Statistical analysis was performed using SPSS version 26. Spearman's rank correlation was used to determine associations between clinical and MRI variables, while binary logistic regression identified independent predictors of nerve root compression. A p-value of <0.05 was considered statistically significant. Among 138 participants, 66.7% were aged 20–50 years and 54.3% were female. Moderate pain was the most common clinical presentation (47.1%), with 55.8% reporting pain radiating

below the knee. MRI showed the L4–S1 level as the most frequently affected segment (34.1%), and disc bulge was the predominant finding (39.9%). Nerve root compression (38.9%), spinal canal stenosis (34.1%), foraminal narrowing (24.6%), and disc degeneration (15.9%) were the main MRI abnormalities. Age was significantly associated with nerve root compression, spinal canal stenosis, and foraminal narrowing ($p<0.05$), while disc pathology showed a strong association with nerve root compression ($r = -0.785$, $p<0.001$). Logistic regression identified increasing age (OR=7.67), male gender (OR=2.71), spinal canal stenosis (OR=5.45), and foraminal narrowing (OR=5.45) as independent predictors of nerve root compression.

**Keywords**: Sciatica, Magnetic Resonance Imaging, Lumbar Disc, Foraminal

## Introduction:

Sciatica is a common clinical condition characterized by pain that radiates from the lower back into the buttock and lower limb, usually along the distribution of the sciatic nerve. It may be associated with numbness, tingling, sensory changes, muscle weakness, and restricted physical activity. [1] Sciatica is commonly related to lumbar disc herniation and other degenerative changes that can affect or compress the spinal nerve roots[2]. The severity of symptoms varies considerably among patients and may range from mild intermittent pain to severe pain with neurological deficits and significant functional limitation.[3] Lumbar disc herniation is one of the major structural causes of sciatica and occurs when disc material extends beyond its normal anatomical boundaries and may cause mechanical or inflammatory irritation of a nerve root.[4] Other lumbar spine abnormalities, including disc degeneration, spinal canal stenosis, foraminal narrowing, and facet joint changes, may also contribute to lumbar radicular symptoms.[5] Because these structural abnormalities can have different clinical effects, accurate assessment of both imaging findings and clinical symptoms is important for appropriate diagnosis and management.[6] Magnetic resonance imaging (MRI) is widely used for evaluating patients with suspected lumbar radiculopathy because it provides detailed visualization of the intervertebral discs, spinal canal, neural foramina, nerve roots, and surrounding soft tissues.[7] MRI can demonstrate disc bulging, protrusion, extrusion, nerve-root compression, spinal stenosis, and degenerative changes that may explain the patient's symptoms.[8] Recent research has also shown that advanced MRI techniques can provide additional information regarding nerve-root injury and may demonstrate associations with pain intensity and neurophysiological abnormalities in patients with lumbar radiculopathy.[9] Despite the important role of MRI, the relationship between radiological

abnormalities and clinical severity remains complex. Structural abnormalities may be present in patients who have relatively mild symptoms, while some patients with considerable pain and functional impairment may show limited structural abnormalities on conventional MRI.[10] A recent study comparing MRI with electrodiagnostic testing demonstrated that the two methods assess different aspects of lumbosacral radiculopathy, with MRI primarily demonstrating structural abnormalities and electrodiagnostic studies evaluating nerve-root function.[11] Similarly, research on lumbar disc herniation has emphasized that combining clinical examination with MRI findings can improve identification of the level, location, and characteristics of disc pathology.[12]

The severity of MRI abnormalities may also show variable relationships with pain and disability. A recent study found that lumbar MRI measurements were partially associated with pain and disability, with disc degeneration showing a stronger relationship with disability and spinal canal stenosis being more closely related to leg pain.[13] Another systematic review reported that considering multiple MRI abnormalities together may provide a stronger relationship with pain and disability than assessing individual MRI findings separately.[14] These findings suggest that the clinical importance of MRI abnormalities should be interpreted in combination with the patient's symptoms and functional status rather than on imaging appearance alone. Clinical assessment remains essential in patients with sciatica because pain intensity, duration of symptoms, sensory changes, muscle weakness, reflex abnormalities, and functional limitation provide important information about disease severity.[15] Recent evidence indicates that MRI findings can complement clinical assessment, but imaging should not replace a detailed history and physical examination.[16] The clinical relevance of MRI is particularly important when symptoms persist, neurological deficits develop, or invasive treatment is being considered.[17] Recent studies have further highlighted the importance of accurately identifying clinically meaningful lumbar abnormalities because treatment decisions may depend on the relationship between symptoms and structural pathology.[18] In patients with lumbar disc herniation, the severity and duration of sciatica can influence treatment decisions, while the presence of neurological deficits may indicate the need for more advanced management.[19] Therefore, understanding the relationship between MRI findings and clinical severity may help clinicians interpret imaging more effectively and improve patient assessment. Hence, the present study aims to evaluate the correlation between lumbar spine MRI findings and clinical severity among patients with sciatica. Assessing the association between specific MRI abnormalities and clinical manifestations may provide a better understanding of the imaging–clinical relationship and may

contribute to more accurate diagnosis, assessment of disease severity, and clinical management of patients with lumbar sciatica. [20]

## Material and methods:

A descriptive cross-sectional study was conducted at the Department of Radiology, Lady Reading Hospital, Peshawar, a major tertiary and quaternary referral center serving patients from diverse geographic and socioeconomic backgrounds. The study was carried out over a period of 4–6 months. A non-probability convenience sampling technique was used, and all eligible patients presenting during the study period were recruited. The sample size was determined using an online sample size calculator. Participants included patients aged 20–70 years with a clinical diagnosis of sciatica, radicular pain commonly extending below the knee, symptoms persisting for at least 6 weeks, and a positive Straight Leg Raise (SLR) test. Patients with previous lumbar spine surgery, spinal tumors, severe trauma, spinal infections, inflammatory spinal conditions, congenital spinal deformities, peripheral neuropathy, vascular causes of leg pain, pregnancy, or poor-quality/incomplete MRI scans were excluded. After approval from the Graduate Committee and permission from the Head of the Department, eligible patients undergoing lumbar spine MRI were recruited after obtaining informed consent. Clinical severity was assessed through patient history, physical examination, Visual Analogue Scale (VAS) pain score, and a disability scale, while MRI findings were documented using a structured proforma. Data were entered into a secure database for statistical analysis and graphical presentation. Confidentiality, voluntary participation, and the right to withdraw from the study were maintained throughout the research process.

Demographic distribution of patients:

Age Wise Distribution:

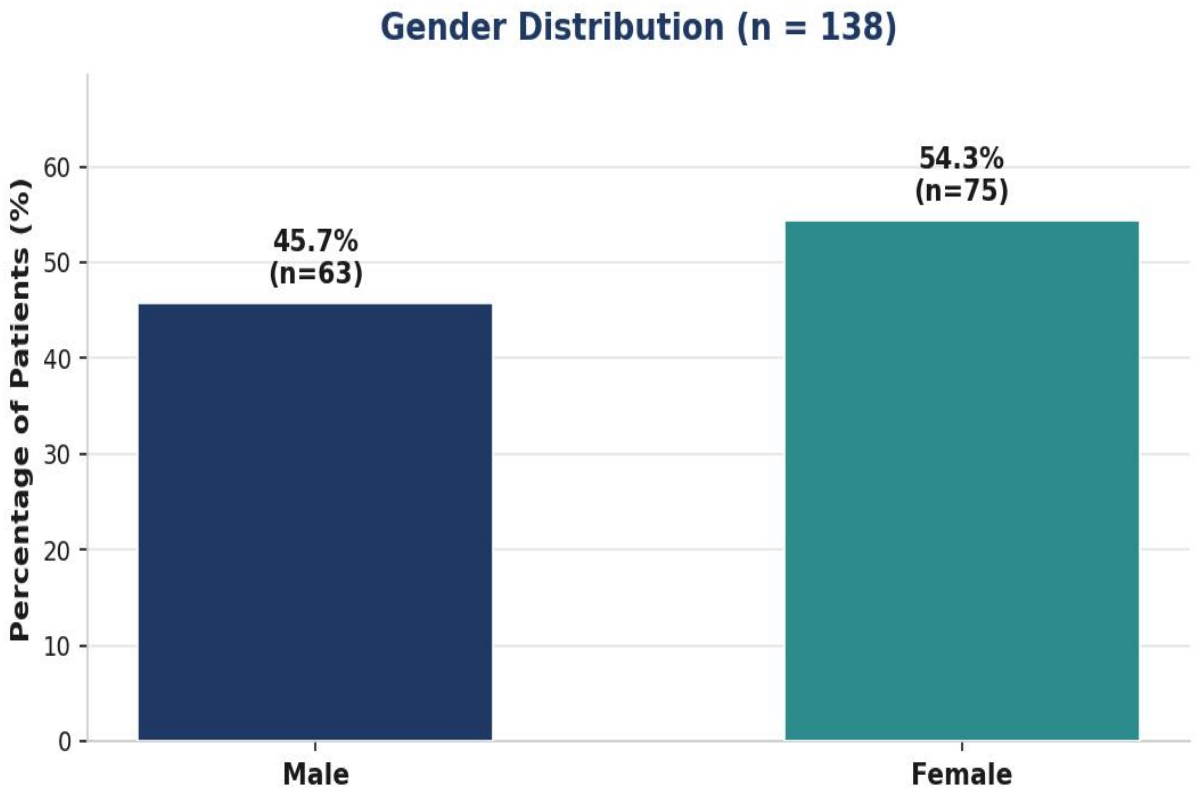
Out of 138 patients, 46 (33.3%) were between 50 and 70 years of age, while 92 (66.7%) were between 20 and 50 years. This indicating sciatica predominantly affected the younger and middle-aged population.

Table 1 shows the age wise distribution of patients

| Age Group | Frequency | Percent |
|---|---|---|
| 20-49 years | 92 | 66.7 |
| 50- 70 years | 46 | 33.3 |
| | 138 | 100.0 |

Gender wise Distribution

The total number of participants was 138, n= 63 were males and n= 75nwere females. Females comprised a slightly higher proportion (54.3%) than males (45.7%).



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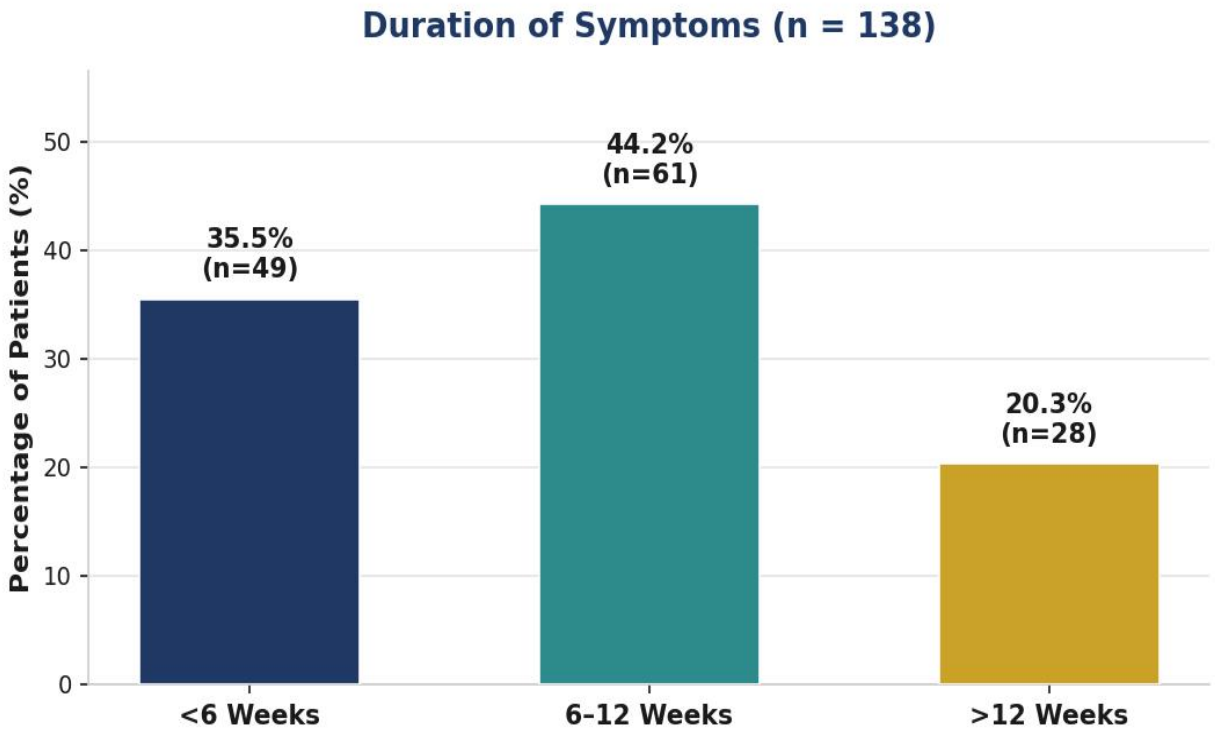
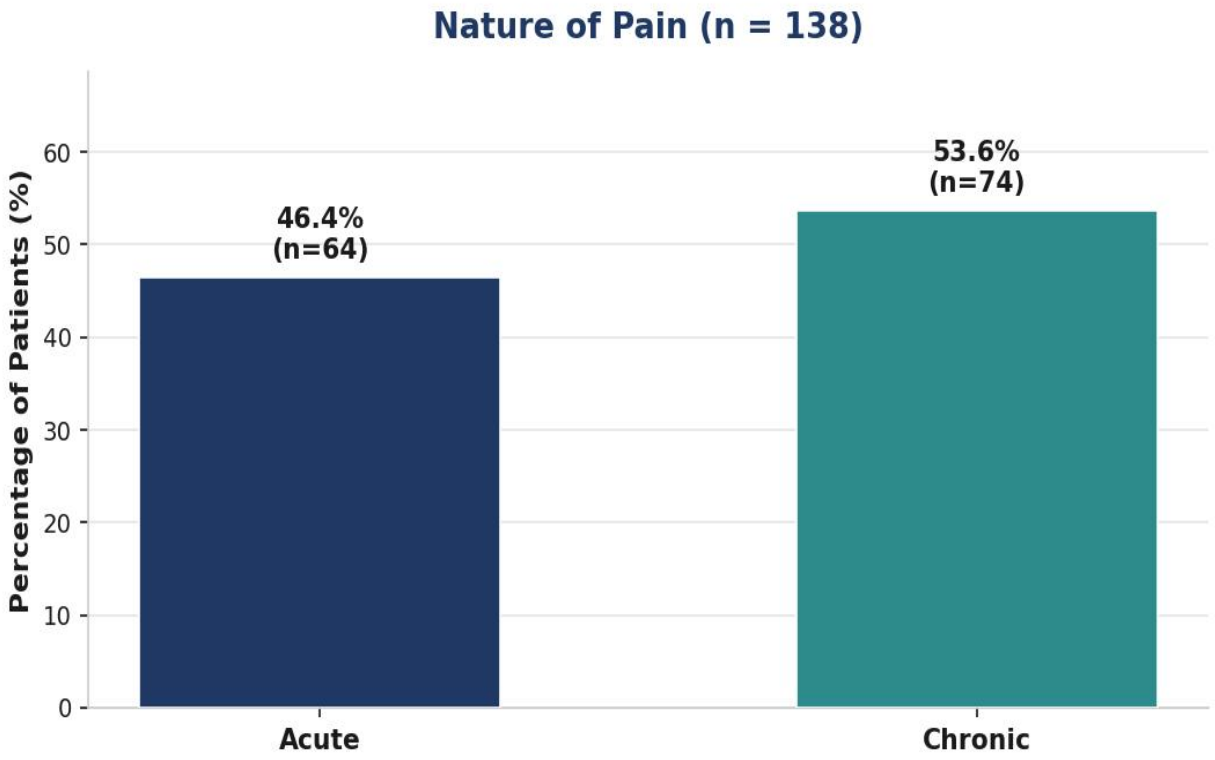
### Duration of Symptoms

The duration of symptoms reported by the participants. Majority patients, 61 (44.2%), experienced symptoms for 6–12 weeks, followed by 49 (35.5%) with symptoms lasting less than 6 weeks, while 28 (20.3%) had symptoms for more than 12 weeks. This indicates that the majority of patients are presented during the subacute stage of the disease.



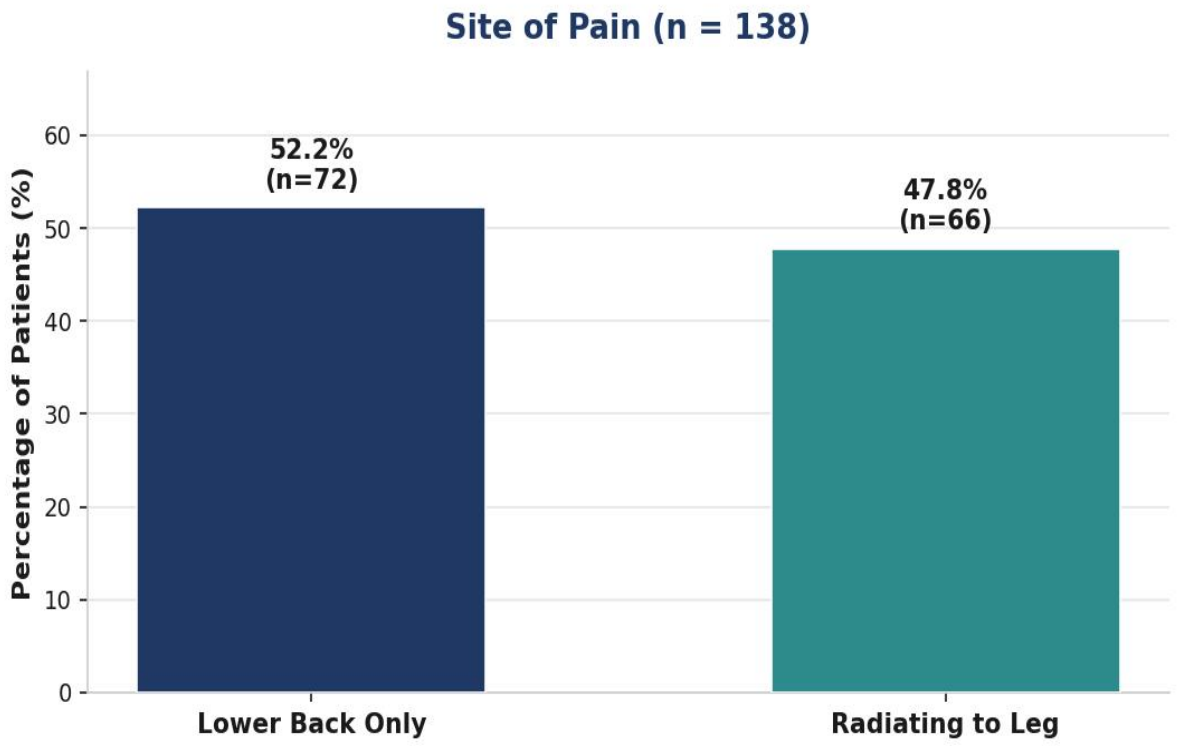

### Nature of Pain

Chronic pain was observed by 74 (53.6%) patients, whereas acute pain was reported in 64 (46.4%) patients. These findings demonstrated that chronic pain was slightly more prevalent than acute pain in the study group.



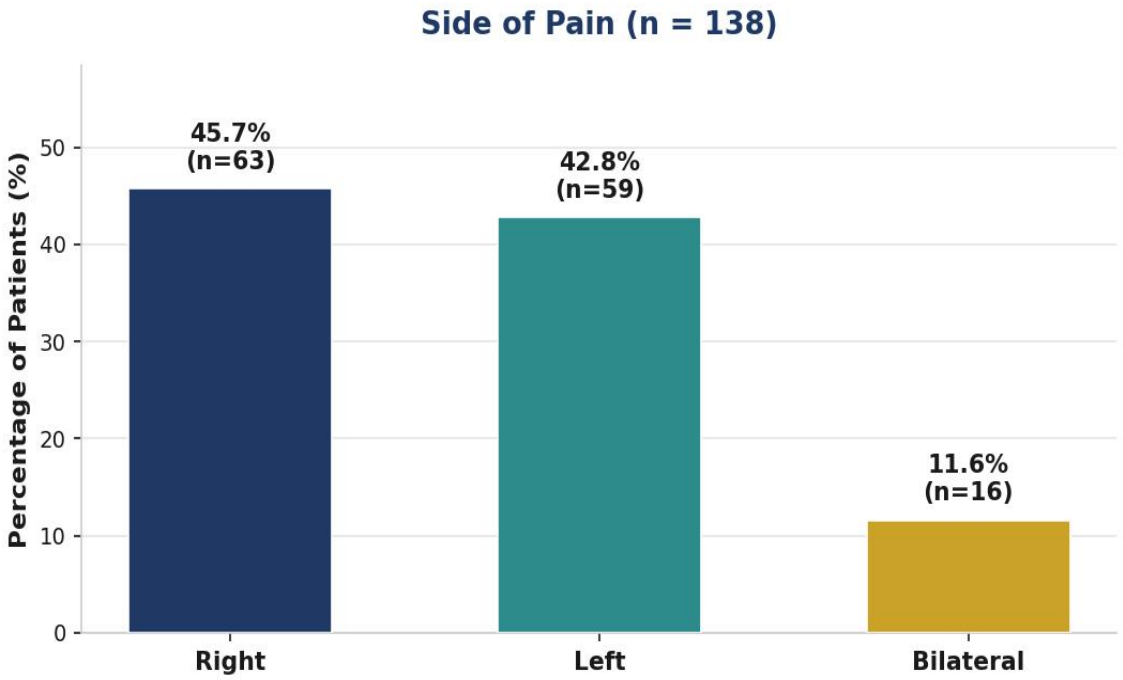

## Site of Pain

Lower back pain only was reported by 72 (52.2%) patients, while pain radiating out to the leg was observed in 66 (47.8%) patients. This demonstrates that lower back pain was the most frequent presenting complaint.



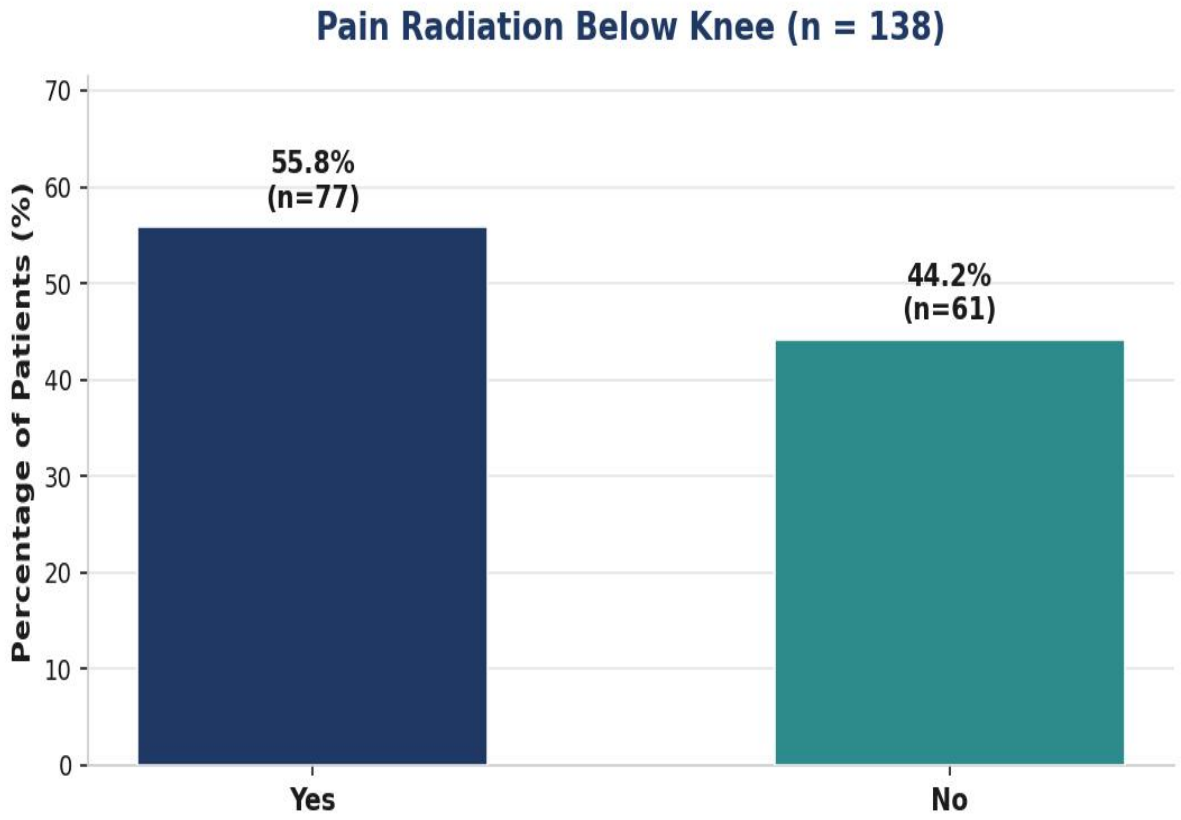

### Side of Pain

Right-sided pain was reported in 63 (45.7%) patients, left-sided pain in 59 (42.8%), and bilateral pain in 16 (11.6%). Right-sided involvement was slightly more prevalent than left-sided involvement.



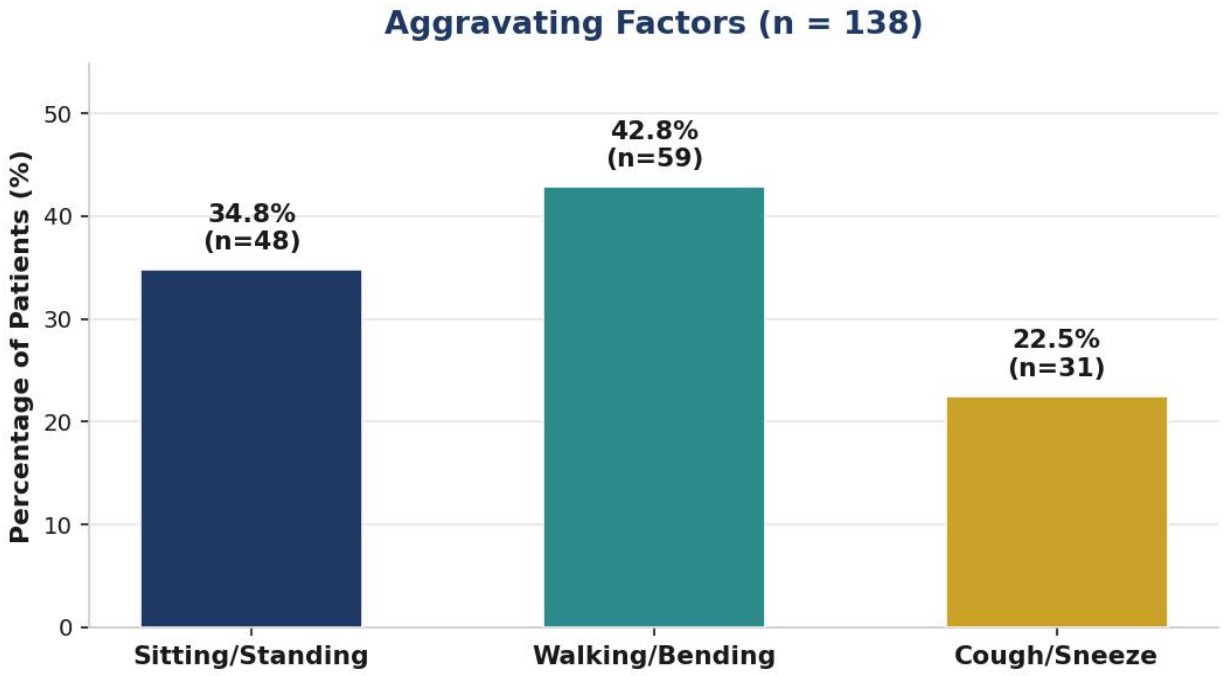

### Pain Radiation Below Knee

Total of 77 (55.8%) patients reported pain radiating below the knee and 61 (44.2%) did not. The finding indicates that more than half of the participants had a common feature of sciatica.



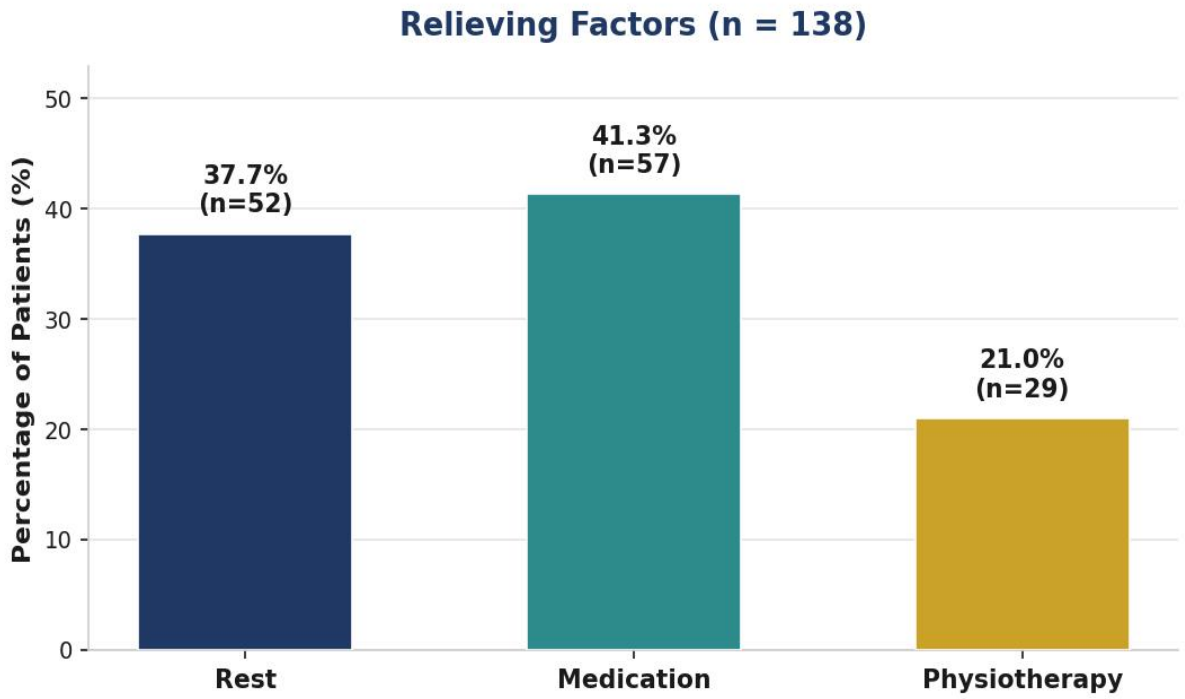

## Aggravating Factors

Bending and walking were reported as aggravating factors by 59 (42.8%) patients, followed by standing or sitting in 48 (34.8%) patients, while sneezing or coughing aggravated symptoms in 31 (22.5%) patients. Bending and walking emerged as the most common aggravating factors.



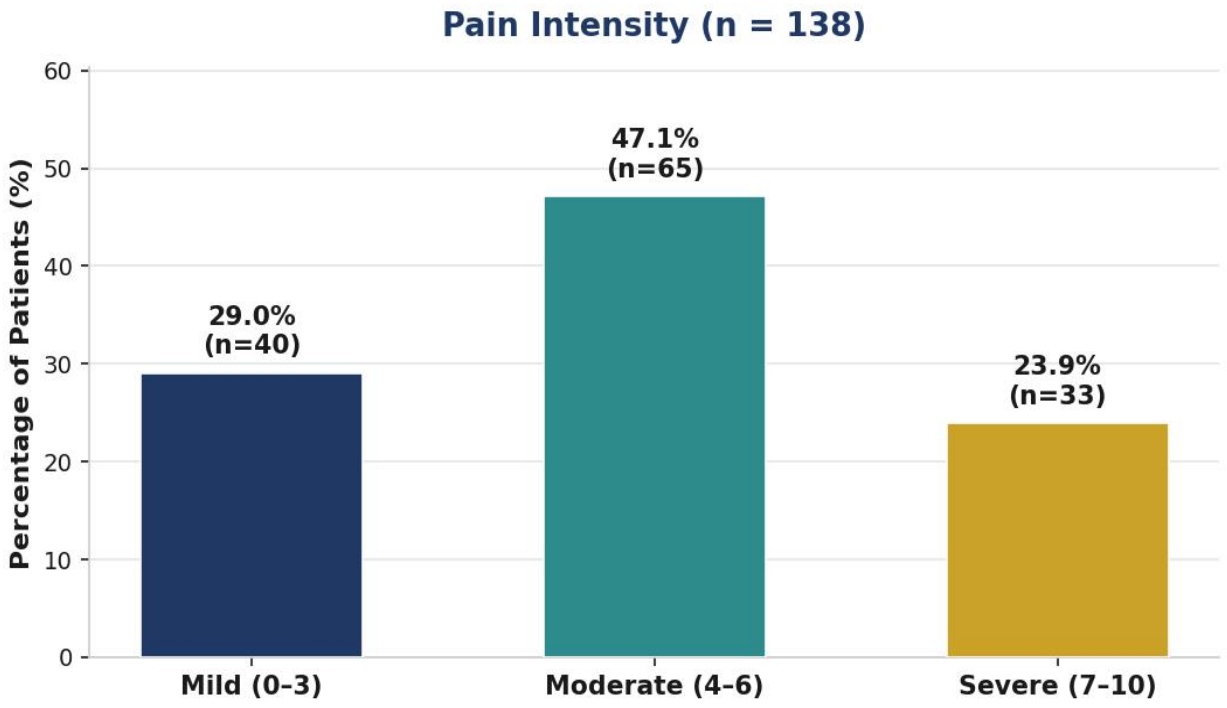

### Relieving Factors

Medication provided relief in 57 (41.3%) patients, physiotherapy in 29 (21.0%) and rest in 52 (37.7%) of patients. Medication was therefore the most frequently reported relieving factor.



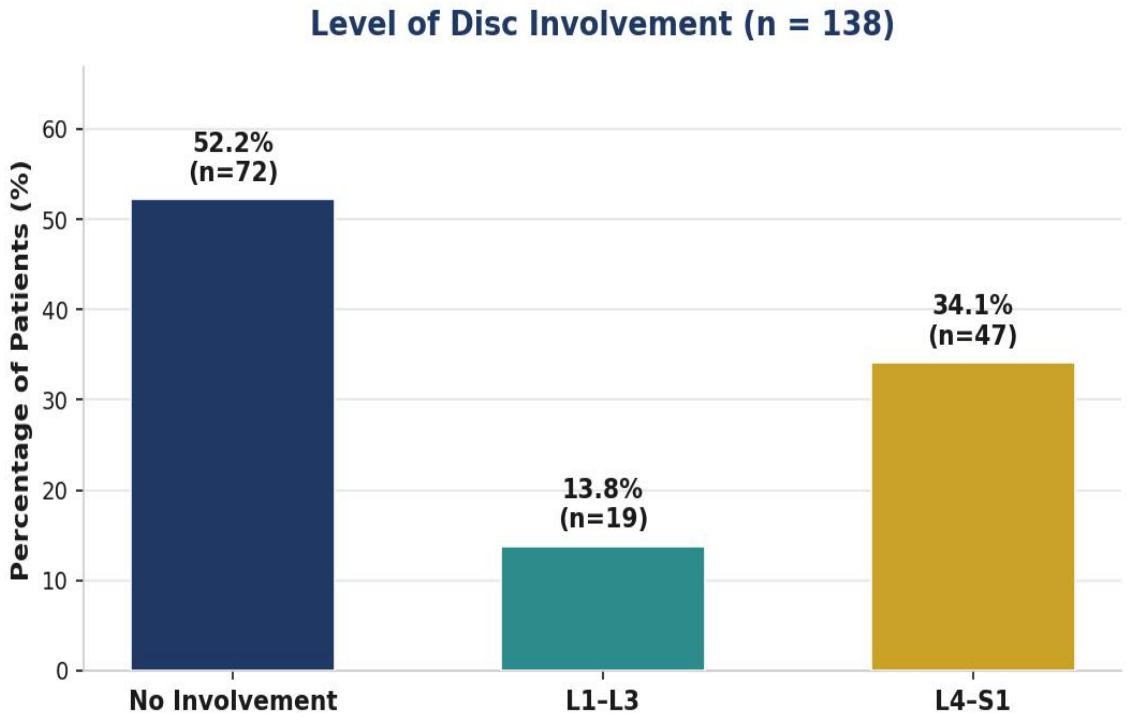

### Pain Intensity

Moderate pain was the most common category, affecting 65 (47.1%) patients, followed by mild pain in 40 (29.0%), and severe pain in 33 (23.9%) patients. These results shows that nearly half of the participants experienced moderate pain intensity.



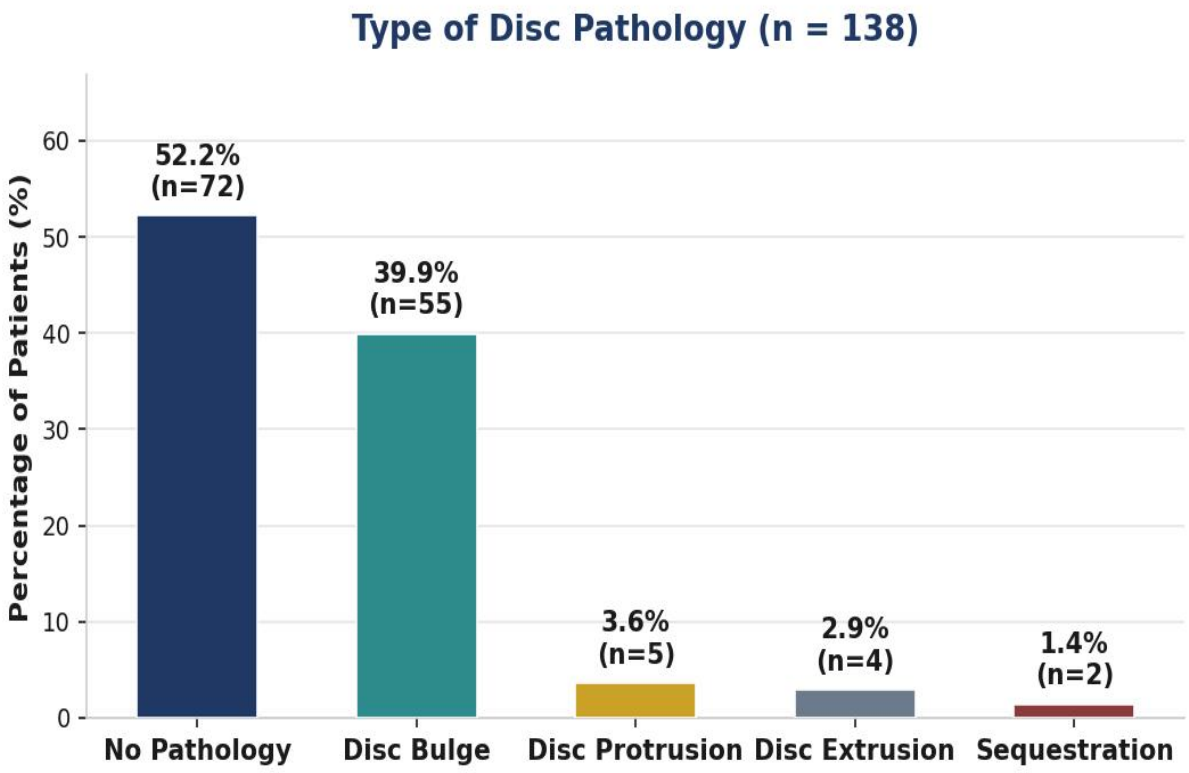

### Level of Disc Involvement

Disc involvement at the L4–S1 level was recognized in 47 (34.1%) patients, while involvement at L1–L3 was found in 19 (13.8%) patients. No disc involvement was observed in 72 (52.2%) patients. The L4–S1 region was the most frequently affected spinal level.



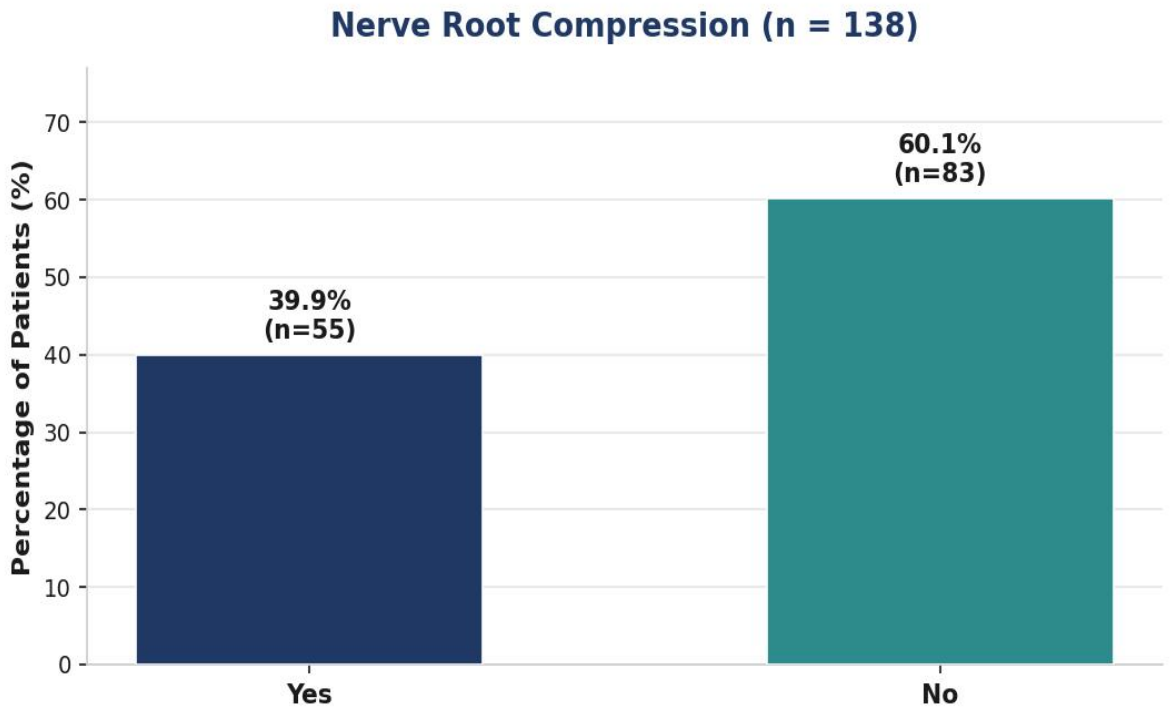

## Type of Disc Pathology

The most prevalent abnormality was disc bulge, which was observed in 55 patients (39.9%), followed by disc extrusion in 4 patients (2.9%), disc protrusion in 5 patients (3.6%), and sequestration in 2 patients (1.4%). In 72 (52.2%) patients, no disc pathology was noted.



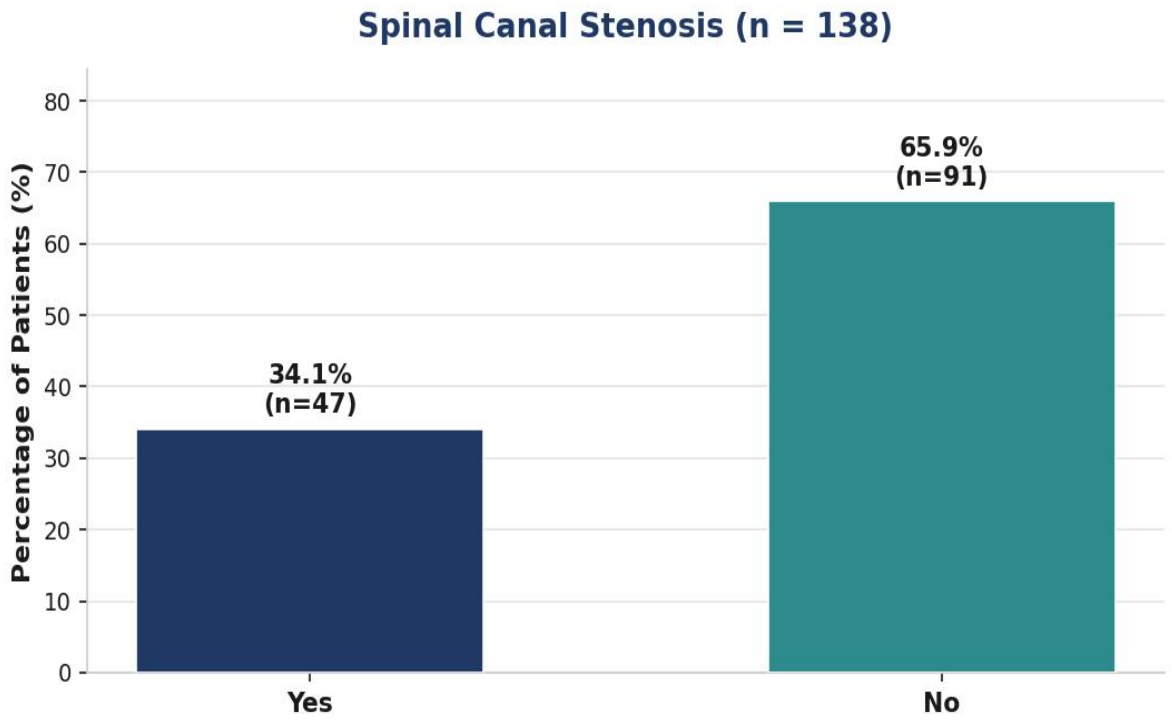

## Nerve Root Compression

Nerve root compression was reported in 55 (39.9%) patients, whereas 83 (60.1%) patients demonstrated no visible signs of compression. The findings indicate that nerve root compression was present in a large proportion of patients.



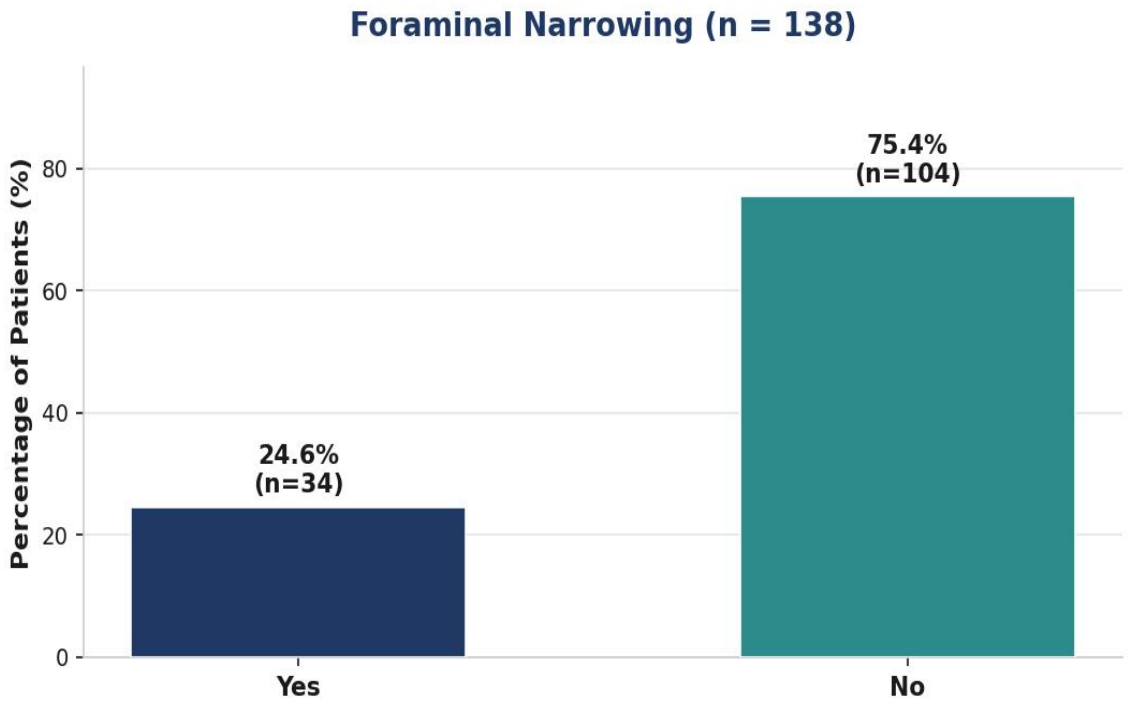

Spinal Canal Stenosis (n = 138)

Stenosis was observed in 47 (34.1%) patients, whereas 91 patients (65.9%) had no stenosis. Therefore, spinal canal stenosis was present in approximately one-third of the study population.



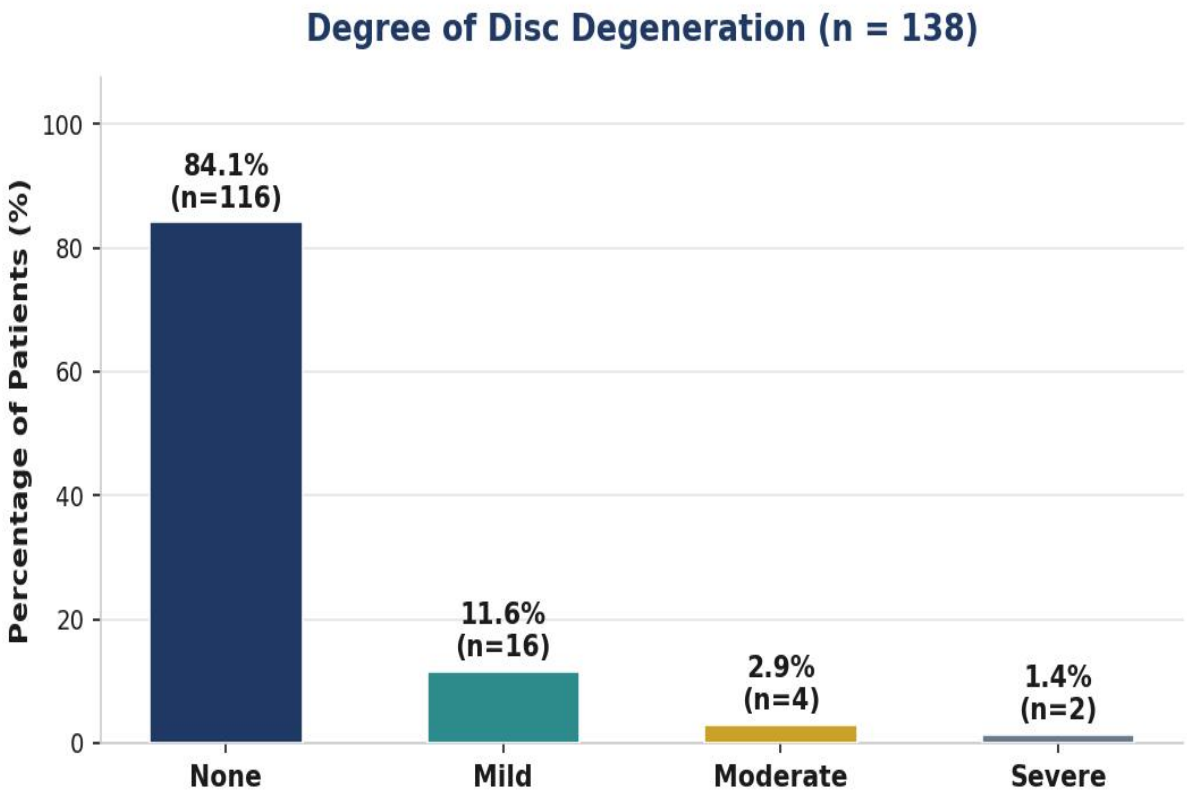

### Foraminal Narrowing

Foraminal narrowing was observed in 34 (24.6%) patients, whereas 104 (75.4%) patients had no foraminal narrowing. This indicates that foraminal narrowing was less prevalent among the MRI findings.




Degree of Disc Degeneration

Mild degeneration was observed in 16 (11.6%) patients, moderate degeneration in 4 (2.9%), and severe degeneration in only 2 (1.4%) patients. No degeneration was indicated in 107 (77.5%) patients, indicating that degenerative changes were relatively rare in the study sample.




### Side of Nerve Involvement on MRI

Right-sided involvement was observed in 31 (22.5%) patients, left-sided involvement in 17 (12.3%), and bilateral involvement in 12 (8.7%) patients. In 78 (56.5%) of the patients, no nerve involvement was identified. The most common pattern among those with nerve involvement was right-sided involvement.

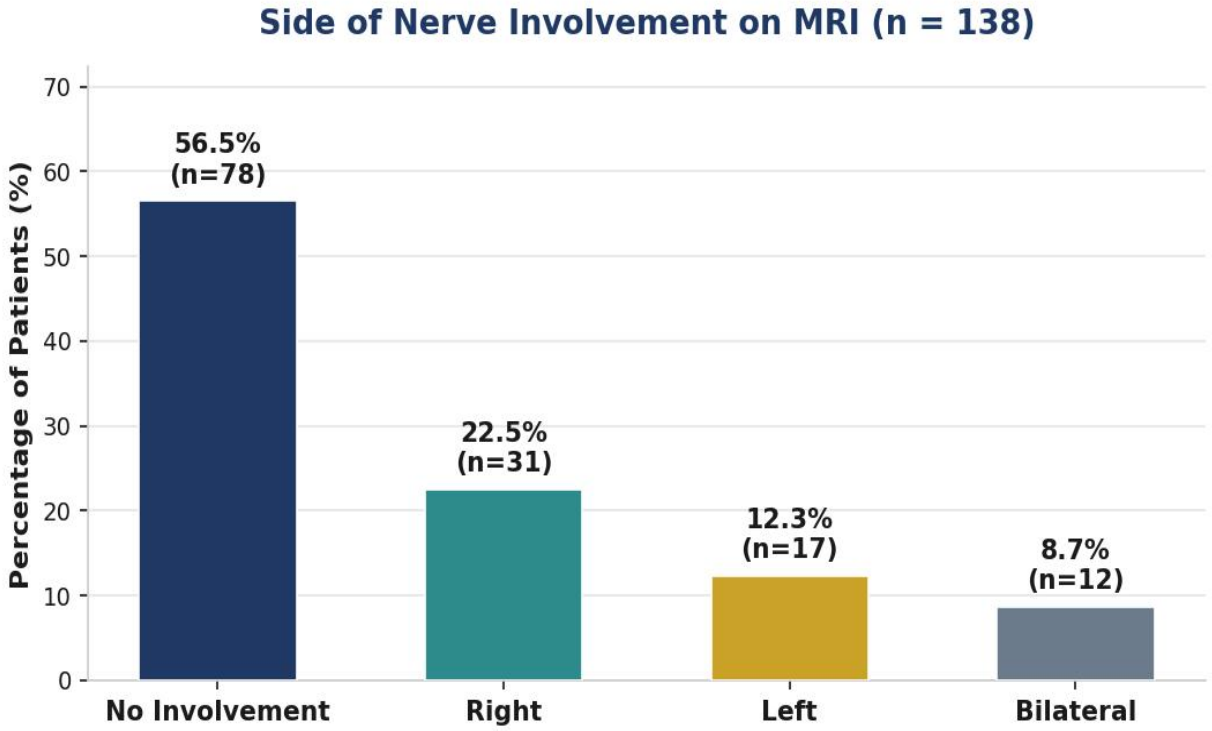



Table 2 Chi-square Test Showing Association Between Clinical Variables and MRI Findings (n = 138)

| Variables | $X^2$ (Chi-square) | df | p-value | Interpretation |
|---|---|---|---|---|
| Age × Nerve Root Compression | 13.84 | 2 | **<0.001*** | **Significant** |
| Age × Spinal Canal Stenosis | 9.27 | 2 | **0.010*** | **Significant** |
| Gender × Nerve Root Compression | 4.31 | 1 | **0.038*** | **Significant** |
| Duration of Symptoms × Nerve Root Compression | 3.34 | 2 | 0.188 | Not Significant |
| Pain Intensity × Nerve Root Compression | 0.40 | 2 | 0.819 | Not Significant |
| Disc Degeneration × Nerve Root Compression | 0.82 | 1 | 0.365 | Not Significant |

| Variables | $X^2$ (Chi-square) | df | p-value | Interpretation |
|---|---|---|---|---|
| Spinal Canal Stenosis × Nerve Root Compression | 11.16 | 1 | **0.001**** | **Significant** |
| Foraminal Narrowing × Nerve Root Compression | 7.98 | 1 | **0.005**** | **Significant** |
| Disc Pathology × Nerve Root Compression | 52.91 | 3 | **<0.001***** | **Highly Significant** |

*Significance level: p < 0.05 = Significant; p < 0.01 = Highly Significant; p < 0.001 = Very Highly Significant.*

**Table 2 Spearman's Rank Correlation Matrix (Significant Correlations Only)**

| Variable 1 | Variable 2 | Correlation (r) | p-value |
|---|---|---|---|
| Age | Disc Degeneration | -0.107 | 0.213 |
| Age | Spinal Canal Stenosis | 0.249 | **0.003** |
| Age | Nerve Root Compression | 0.419 | **<0.001*** |
| Age | Foraminal Narrowing | 0.262 | **0.002** |
| Duration of Symptoms | Disc Degeneration | -0.033 | 0.700 |
| Duration of Symptoms | Nerve Root Compression | -0.146 | 0.087 |
| Pain Intensity | Nerve Root Compression | -0.139 | 0.104 |
| Pain Intensity | Spinal Canal Stenosis | -0.152 | 0.074 |
| Site of Pain | Nerve Root Compression | -0.050 | 0.558 |
| Disc Degeneration | Spinal Canal Stenosis | -0.272 | **0.001** |
| Disc Degeneration | Foraminal Narrowing | -0.271 | **0.001** |
| Disc Degeneration | Nerve Root | -0.186 | **0.029** |

| Variable 1 | Variable 2 | Correlation (r) | p-value |
|---|---|---|---|
| | Compression | | |
| Disc Pathology | Nerve Root Compression | -0.785 | **<0.001*** |
| Disc Pathology | Spinal Canal Stenosis | -0.589 | **<0.001*** |
| Disc Pathology | Foraminal Narrowing | -0.462 | **<0.001*** |
| Spinal Canal Stenosis | Foraminal Narrowing | 0.405 | **<0.001*** |
| Spinal Canal Stenosis | Nerve Root Compression | 0.508 | **<0.001*** |
| Foraminal Narrowing | Nerve Root Compression | 0.462 | **<0.001*** |

*Significance level: p < 0.05; bold p < 0.01; bold* p < 0.001.*

**Table 4 Strong Significant Correlations (|r| ⩾ 0.40, p < 0.001)**

| Variables | Correlation (r) | p-value | Strength of Correlation |
|---|---|---|---|
| Disc Pathology ↔ Nerve Root Compression | **-0.785** | **<0.001** | Very Strong |
| Disc Pathology ↔ Spinal Canal Stenosis | **-0.589** | **<0.001** | Strong |
| Spinal Canal Stenosis ↔ Nerve Root Compression | **0.508** | **<0.001** | Strong |
| Disc Pathology ↔ Foraminal Narrowing | **-0.462** | **<0.001** | Moderate |
| Foraminal Narrowing ↔ Nerve Root Compression | **0.462** | **<0.001** | Moderate |
| Age ↔ Nerve Root Compression | **0.419** | **<0.001** | Moderate |
| Spinal Canal Stenosis ↔ Foraminal Narrowing | **0.405** | **<0.001** | Moderate |

Table 5 Binary Logistic Regression – Dependent Variable: Nerve Root Compression (Full Model)

| Variable | B | S.E. | Wald | df | p-value | Exp(B) | 95% CI |
|---|---|---|---|---|---|---|---|
| Age | 2.037 | 0.594 | 11.78 | 1 | **0.001**** | 7.67 | 2.40–24.56 |
| Gender | 0.996 | 0.480 | 4.30 | 1 | **0.038*** | 2.71 | 1.06–6.94 |
| Duration of Symptoms | -0.555 | 0.422 | 1.73 | 1 | 0.189 | 0.57 | 0.25–1.31 |
| Pain Intensity | 0.095 | 0.419 | 0.05 | 1 | 0.821 | 1.10 | 0.48–2.50 |
| Disc Degeneration | -0.420 | 0.464 | 0.82 | 1 | 0.365 | 0.66 | 0.26–1.63 |
| Canal Stenosis | 1.695 | 0.508 | 11.15 | 1 | **0.001**** | 5.45 | 2.01–14.74 |
| Foraminal Narrowing | 1.695 | 0.600 | 7.97 | 1 | **0.005**** | 5.45 | 1.68–17.67 |

*Nagelkerke $R^2$ = 0.541; Cox & Snell $R^2$ = 0.405; Likelihood Ratio Test: $p < 0.001$.*
** $p < 0.05$; ** $p < 0.01$.*

Table 6 (continued) Binary Logistic Regression – Reduced Model (Significant Predictors Only)

| Variable | B | S.E. | Wald | df | p-value | Exp(B) | 95% CI |
|---|---|---|---|---|---|---|---|
| Age | 2.037 | 0.594 | 11.78 | 1 | **0.001**** | 7.67 | 2.40–24.56 |
| Gender | 0.996 | 0.480 | 4.30 | 1 | **0.038*** | 2.71 | 1.06–6.94 |
| Canal Stenosis | 1.695 | 0.508 | 11.15 | 1 | **0.001**** | 5.45 | 2.01–14.74 |
| Foraminal Narrowing | 1.695 | 0.600 | 7.97 | 1 | **0.005**** | 5.45 | 1.68–17.67 |

*Nagelkerke $R^2$ = 0.517.*
** $p < 0.05$; ** $p < 0.01$.*

A total of 138 patients with clinically diagnosed sciatica were included in this study. Most participants were aged 20–50 years (66.7%), with females (54.3%) slightly outnumbering males (45.7%). Most patients had symptoms lasting 6–12 weeks (44.2%),

while chronic pain was reported by 53.6%. Moderate pain intensity was the most common presentation (47.1%), and pain radiating below the knee was observed in 55.8% of patients. Walking or bending was the most frequent aggravating factor (42.8%), whereas medication was the most common relieving factor (41.3%). MRI evaluation demonstrated that the L4–S1 level was the most frequently involved spinal segment (34.1%). Disc bulge was the predominant MRI finding (39.9%), followed by disc protrusion, extrusion, and sequestration. Nerve root compression was identified in 38.9% of patients, spinal canal stenosis in 34.1%, foraminal narrowing in 24.6%, and disc degeneration in 15.9%, with mild degeneration being the most common grade. Chi-square analysis demonstrated significant associations between age and nerve root compression ($\chi^2 = 13.84$, $p < 0.001$), age and spinal canal stenosis ($\chi^2 = 9.27$, $p = 0.010$), gender and nerve root compression ($\chi^2 = 4.31$, $p = 0.038$), spinal canal stenosis and nerve root compression ($\chi^2 = 11.16$, $p = 0.001$), foraminal narrowing and nerve root compression ($\chi^2 = 7.98$, $p = 0.005$), and disc pathology and nerve root compression ($\chi^2 = 52.91$, $p < 0.001$). However, no significant associations were observed between duration of symptoms, pain intensity, or disc degeneration and nerve root compression ($p > 0.05$). Spearman's correlation analysis revealed significant associations between several MRI findings. Age showed significant positive correlations with nerve root compression, spinal canal stenosis, and foraminal narrowing ($p<0.05$). Disc pathology demonstrated a very strong association with nerve root compression ($r = -0.785$, $p<0.001$), while spinal canal stenosis and foraminal narrowing were also significantly associated with nerve root compression ($p<0.001$). Binary logistic regression identified increasing age (OR=7.67, p=0.001), male gender (OR=2.71, p=0.038), spinal canal stenosis (OR=5.45, p=0.001), and foraminal narrowing (OR=5.45, p=0.005) as significant independent predictors of nerve root compression. The regression model demonstrated good predictive performance (Nagelkerke $R^2=0.541$, $p<0.001$), indicating that these MRI findings and demographic factors were important determinants of nerve root compression in patients with sciatica.

## Discussion:

The present study evaluated the relationship between MRI findings and the clinical severity of sciatica among 138 patients. Clinical characteristics were compared with MRI abnormalities to identify imaging features associated with nerve root compression and symptom severity. Overall, the findings demonstrate that MRI abnormalities, particularly disc pathology, spinal canal stenosis, and foraminal narrowing, are significantly

associated with nerve root compression and clinical presentation. The majority of participants (66.7%) were aged between 20 and 50 years, indicating that lumbar radiculopathy primarily affects the economically productive age group. Although younger adults represented the larger proportion of the study population, increasing age showed a significant positive association with nerve root compression and spinal canal stenosis. This finding is consistent with the work of Ganim *et al.* (2024), who reported that advancing age is associated with progressive degenerative changes leading to greater nerve root compromise. Likewise, the narrative review by de Graaf *et al.* (2023) concluded that age-related degenerative MRI changes become increasingly common and contribute to lumbar symptoms, although imaging findings should always be interpreted alongside clinical examination. Female participants (54.3%) slightly outnumbered males in the present study. However, binary logistic regression identified male gender as an independent predictor of nerve root compression, indicating that male patients had significantly higher odds of MRI-confirmed nerve root compression than females. This finding is consistent with the study by Ganim *et al.* (2024), which reported a higher prevalence of lumbar disc herniation and nerve root compression among male patients, possibly due to greater occupational and mechanical loading of the lumbar spine. Similarly, Hincapié *et al.* (2025) reported that lumbar radiculopathy was more frequently observed in males because of increased exposure to physically demanding activities and other occupational risk factors. In contrast, Jareebi *et al.* (2025) observed a female predominance in their Saudi Arabian population. These differences suggest that gender distribution in sciatica may vary according to demographic characteristics, occupational exposure, healthcare-seeking behavior, and study population rather than biological factors alone. Most patients presented with symptoms lasting between 6 and 12 weeks, while chronic pain was slightly more common than acute pain. Moderate pain intensity was the predominant clinical presentation, with more than half of the patients reporting pain radiating below the knee. These findings are consistent with current clinical guidelines indicating that lumbar radiculopathy commonly presents with moderate pain, lower limb radiation, and functional limitation. Moisset *et al.* (2023) emphasized that pain radiating below the knee remains one of the strongest clinical indicators of nerve root involvement, particularly when accompanied by positive neurological examination findings. MRI evaluation demonstrated that the L4–S1 region was the most frequently involved spinal level. This observation agrees with numerous recent studies. Kilpikoski et al. (2023) reported that L4–L5 and L5–S1 remain the most frequently affected levels because they experience the greatest mechanical stress and mobility. Similarly, Ganim *et al.* (2024) found that the majority of symptomatic

lumbar disc herniations occurred at these lower lumbar levels.Among MRI abnormalities, disc bulge represented the most frequent pathology in the present study, followed by protrusion, extrusion, and sequestration. Disc bulge is recognized as the earliest and most common degenerative abnormality of the lumbar spine. Similar observations were reported by de Graaf *et al.* (2023), who concluded that disc bulging is frequently observed in symptomatic patients, although isolated disc bulges may also occur in asymptomatic individuals. Therefore, MRI findings should always be interpreted within the clinical context. Nerve root compression was identified in approximately 38.9% of patients, whereas spinal canal stenosis and foraminal narrowing were present in 34.1% and 24.6%, respectively. These findings demonstrate that clinically diagnosed sciatica may occur even without definite nerve root compression on MRI. This agrees with Hornung *et al.* (2023), who reported that MRI findings alone cannot fully explain symptom severity because inflammatory changes, nerve sensitivity, and psychosocial factors also contribute to pain perception.One of the most important findings of the present study was the significant correlation between disc pathology and nerve root compression ($r = -0.785$, $p < 0.001$). Strong associations were also observed between spinal canal stenosis, foraminal narrowing, and nerve root compression. These findings are highly consistent with Ganim *et al.* (2024), who demonstrated significant agreement between MRI evidence of disc herniation and neurological findings in patients with lumbar radiculopathy. Similarly, Kilpikoski *et al.* (2023) reported that patients with MRI-confirmed nerve compression generally presented with greater clinical disability than patients without definite compressive pathology. Age also demonstrated significant positive correlations with spinal canal stenosis, foraminal narrowing, and nerve root compression. These findings support the concept that degenerative spinal changes accumulate progressively with age, increasing the likelihood of neural compression. Comparable observations have been reported by de Graaf *et al.* (2023), who concluded that age is one of the strongest predictors of degenerative MRI abnormalities .Binary logistic regression further strengthened these observations by identifying increasing age, female gender, spinal canal stenosis, and foraminal narrowing as independent predictors of nerve root compression. The regression model explained more than half of the variability in nerve root compression (Nagelkerke $R^2 = 0.541$), indicating good predictive performance. Similar multivariable findings have been reported by Hornung *et al.* (2023), who concluded that combining MRI findings with demographic and clinical variables provides better prediction of patient outcomes than MRI alone. Overall, the present study supports the growing evidence that MRI plays an important role in evaluating patients with sciatica; however, imaging findings should always be

interpreted together with clinical history and physical examination. Although several MRI abnormalities were significantly associated with nerve root compression, not all patients with clinical symptoms demonstrated corresponding MRI changes. This reinforces recommendations from recent literature that MRI should complement, rather than replace, comprehensive clinical assessment when diagnosing lumbar radiculopathy.

## Conclusion:

The present study demonstrated a significant but moderate correlation between MRI findings and the clinical severity of sciatica in patients with lumbar spine disorders. Clinically, most patients presented with moderate pain intensity, symptoms lasting 6–12 weeks, and pain radiating below the knee, reflecting the typical features of lumbar radiculopathy. Disc bulge was the most common MRI abnormality, with the L4–S1 level being the most frequently affected. Significant associations were observed between age, disc pathology, nerve root compression, spinal canal stenosis, and foraminal narrowing. Although not all clinically diagnosed patients showed corresponding MRI abnormalities, MRI combined with clinical assessment improves diagnostic accuracy and supports appropriate management of lumbar radiculopathy

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