

Research Article

Prevalence Of Neuropathic Pain Among Patients Suffering from Chronic Lower Back Pain

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Abstract: **Introduction:** Low Back Pain (LBP) is defined as pain or discomfort that occurred in the lower back region. It can arise from the spine, discs, muscles, nerves, or any other surrounding structures. **Aim:** To determine the prevalence of neuropathic pain among patients with chronic low back pain. **Methodology:** A hospital-based cross-sectional observational study was conducted among patients suffering from chronic low back pain in the Department of PMR, at RRC centre SMS medical college Jaipur, from January 2026 to April 2026. **Result:** Among 62 participants with chronic low back pain, 40.32% had neuropathic pain and 59.68% had nociceptive pain according to DN4. Neuropathic pain was more frequent with below-knee radiation and severe pain intensity. **Conclusion:** Neuropathic pain is an important component of chronic low back pain, particularly in patients with distal radiation and greater pain intensity. Routine assessment using DN4 facilitates early identification and appropriate management of neuropathic pain.

Keywords: Chronic Low Back Pain, Neuropathic Pain, DN4 Questionnaire

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INTRODUCTION

Low Back Pain (LBP) is defined as pain or discomfort that occurred in the lower back region [1]. It can arise from the spine, discs, muscles, nerves, or any other surrounding structures. LBP is one of the most common musculoskeletal conditions that affects individuals among almost all age groups [2]. The World Health Organization estimates that a significant proportion of the population experiences LBP during their lifetime, which makes it an important global public health problem. Although most cases of LBP are mainly nociceptive in nature, while a decent proportion of patients develop a neuropathic component [3,4]. Neuropathic pain, according to the International Association for the Study of Pain (IASP), is pain that is caused by a lesion or disease affecting the somatosensory nervous system. In patients with chronic LBP [5], neuropathic pain develops because of nerve-root compression, disc degeneration, inflammatory mediators released from damaged intervertebral discs, or structural abnormalities that affect spinal nerves. The presence of neuropathic pain results in greater pain severity, functional disability, poorer quality of life and increased healthcare utilization compared with nociceptive pain alone. Therefore, differentiation between neuropathic [6] and nociceptive components of LBP is important for appropriate clinical assessment and management. The reported prevalence of neuropathic pain among patients with chronic LBP varies according to populations and geographical regions [7]. National health survey data showed that musculoskeletal disorders constitute an important health concern [8,9]. Therefore, the need for population-specific studies to determine the magnitude of neuropathic pain and identify patients who require specific therapeutic approaches. The assessment of neuropathic pain can be performed using validated screening instruments such as the Douleur Neuropathique 4 (DN4) questionnaire [10]. These tools help clinicians in identifying neuropathic characteristics in patients whose pain otherwise be classified as nonspecific LBP. Early recognition of neuropathic pain is particularly important in primary healthcare settings, where diagnostic facilities and specialized treatment options facilities are very less. In rural and semi-urban areas, limited access to advanced healthcare facilities further complicates the management of chronic LBP and its neuropathic component. Therefore, determining the prevalence and clinical characteristics of neuropathic pain among patients with chronic LBP is important for diagnosis, treatment and referral practices. The present study was done to assess the prevalence of neuropathic pain among patients suffering from chronic low back pain. The findings provide useful information for healthcare professionals and policymakers and contribute to improving strategies for the prevention, early identification and appropriate management of chronic low back pain and associated neuropathic pain.

Aim

To determine the prevalence of neuropathic pain among patients with chronic low back pain.

MATERIALS AND METHODS

A hospital-based cross-sectional observational study was conducted among patients suffering from chronic low back pain in the Department of PMR, at RRC centre SMS medical college Jaipur, from January 2026 to April 2026. The study included a total of 62 patients. Patients aged ≥ 18 years with chronic low back pain of at least 3 months duration and who were willing to participate- were included. Patients with acute low back pain of less than 3 months duration, history of major spinal trauma or recent spinal surgery, spinal malignancy, severe neurological or psychiatric disorders affecting pain assessment, other major causes of neuropathic pain unrelated to low back pain and those who do not provide informed consent were excluded. After taking informed consent, demographic and clinical details, duration and pattern of pain and pain radiation were noted. Pain intensity was assessed using the Visual Analogue Scale (VAS), categorized as mild (1–3), moderate (4–6) and severe (7–10). The neuropathic component was assessed using the Douleur Neuropathique 4 (DN4) questionnaire, with a score ≥ 4 considered indicative of neuropathic pain and a score < 4 considered nociceptive pain.

RESULTS

In the present study, the majority of participants belonged to the 40–49 years age group (38.71%), followed by 30–39 years (24.19%) and 50–59 years (19.35%). Participants aged 20–29 years constituted 9.68%, while those aged ≥ 60 years accounted for 8.06% (Table 1).

In the present study, females constituted the majority of participants, accounting for 54.84% ($n = 34$). males comprised 45.16% ($n = 28$) of the study population (Table 2).

In the present study, 35.48% ($n = 22$) of participants had a symptom duration of 6–12 months, while an equal proportion had symptoms for > 12 months. The remaining 29.43% ($n = 18$) had symptoms for 3–6 months; based on the DN4 score, 40.32% ($n = 25$) had neuropathic pain, while 59.68% ($n = 37$) had nociceptive pain (Table 3).

Among patients with localized back pain, neuropathic pain was present in 5 cases and nociceptive pain in 20 cases. Neuropathic pain was more common among those with pain below the knee (13 cases), whereas nociceptive pain predominated in pain above the knee (10 cases) and localized back pain (20 cases) (Table 4).

Table 1: Age-Wise Distribution of Patients

Age Group (Years)	Number	Percentage
20-29	6	9.68
30-39	15	24.19
40-49	24	38.71
50-59	12	19.35
≥ 60	5	8.06
Total	62	100

Table 2: Gender Distribution

Gender	Number	Percentage
Female	34	54.84
male	28	45.16

Table 3: Duration of Chronic Low Back Pain and Distribution According to DN4 Score

Duration	Number	Percentage
3–6 months	18	29.43
6–12 months	22	35.48
> 12 months	22	35.48
DN4 Score		
< 4 (Nociceptive Pain)	37	59.68
≥ 4 (Neuropathic Pain)	25	40.32

Table 4: Pain Radiation and Neuropathic Pain

Pain Radiation	Neuropathic Pain	Nociceptive Pain	Total
Localized back pain	5	20	25
Pain above knee	7	10	17
Pain below knee	13	7	20

Table 5: Association Between Age Group and Neuropathic Pain

Age Group	Neuropathic Pain	Nociceptive Pain	Total
20-29	1	5	6
30-39	5	10	15
40-49	12	12	24
50-59	5	7	12
≥ 60	2	3	5
Total	25	37	62

Table 6: Severity of Pain (VAS) and Neuropathic Pain

VAS Score	Neuropathic Pain	Nociceptive Pain	Total
Mild (1-3)	2	8	10
Moderate (4-6)	9	18	27
Severe (7-10)	14	11	25
Total	25	37	62

Neuropathic pain was most frequently observed in the 40–49 years age group (12 cases), while nociceptive pain was also highest in this age group (12 cases). Overall, 25 participants had neuropathic pain and 37 had nociceptive pain, with nociceptive pain predominating across the study population (Table 5).

Among patients with mild pain, 2 had neuropathic pain and 8 had nociceptive pain, while moderate pain was reported in 9 and 18 patients, respectively. Severe pain was more frequent among patients with neuropathic pain (14 cases) compared with nociceptive pain (11 cases) (Table 6).

DISCUSSION

In the present study, a total of 62 participants were included. The majority belonged to the 40–49 years age group, comprising 38.71% (n = 24). This was followed by the 30–39 years age group, with 24.19% (n = 15). Participants aged 50–59 years accounted for 19.35% (n = 12). The 20–29 years age group constituted 9.68% (n = 6), while ≥60 years accounted for 8.06% (n = 5). Similar to our study, the dominance of the 40–49-year age group among respondents are consistent with findings from Bener *et al.* [11] and Kaur K *et al.* [12].

In the present study, a total of 62 participants were included. Among them, 34 (54.84%) were females males constituted 28 (45.16%) of the participants. The difference between male and female participation was relatively small. Kim Jin-Hwan *et al* [13] A total of 1,200 patients (females: 65.7%; mean age: 63.4±13.0 years) were enrolled.

In the present study, 18 (29.43%) participants had symptoms for 3–6 months. A total of 22 (35.48%) participants had symptoms for 6–12 months. Similarly, 22 (35.48%) participants had symptoms for more than 12 months. Attal N *et al.* [14]. In total, 132 patients (52 men, 80 women, mean age: 54.7 6 14.3, range 22–85 years, mean low back pain intensity: 6.4 6 1.77, range 4–10) were included in the study. There were no significant demographic differences between the groups in terms of age, duration of pain, sex ratio.

In our study According to the DN4 score, 37 (59.68%) participants had a score <4, indicating nociceptive pain. The remaining 25 (40.32%) participants had a DN4 score ≥4, indicating neuropathic pain. Similar to our study Hassan AE *et al.* [15], found that 41% of the chronic low back pain patients had neuropathic pain and 59% had nociceptive pain.

In our study Among patients with localized back pain, 5 had neuropathic pain and 20 had nociceptive pain. Among those with pain above the knee, 7 had neuropathic pain and 10 had nociceptive pain. Among patients with pain below the knee, 13 had neuropathic pain and 7 had nociceptive pain. Thus, neuropathic pain was most frequently observed among patients with pain below the knee. Nociceptive pain was most common among patients with localized back pain. Similar to our study Attal N *et al* [14] investigated the neuropathic components of chronic Low Back Pain (LBP) in patients with and without lower limb pain using the DN4 questionnaire and confirmed its psychometric properties. Patients (n = 132) from 11 French multidisciplinary pain or rheumatology centers were classified by a first investigator into 4 groups derived from the Quebec Task Force Classification of Spinal Disorders (QTFSD): group 1 (pain restricted to the lumbar area); group 2 (pain radiating proximally); group 3 (pain radiating below the knee without neurologic signs); and group 4 (pain radiating towards the foot in a dermatomal distribution, with neurological signs, corresponding to typical radiculopathy). A second investigator applied the DN4 questionnaire to the lower limb (groups 2 to 4) and lower back. A comparison of groups 1 and 4 confirmed the psychometric properties of DN4 (sensitivity 80%; specificity 92%, for a cutoff of 4/10, similar to other neuropathic conditions). In the lower limb, the proportion of patients with Neuropathic Pain (NP) was related to the distality of pain radiation (15, 39 and 80% in groups 2, 3 and 4, respectively; p<0.0001). In the lower back, the proportion of patients with NP was higher for patients with typical radicular pain compared with the other groups (p = 0.006). Thus, typical radiculopathy has similar characteristics as other neuropathic conditions and is confirmed as the commonest neuropathic syndrome in LBP patients. The observation that neuropathic and nociceptive components of LBP vary in the back and lower limb probably accounts for the discrepancies of reported prevalence rates of NP in LBP.

In the 20–29 years age group, 1 participant had neuropathic pain and 5 had nociceptive pain. Among participants aged 30–39 years, 5 had neuropathic pain and 10 had nociceptive pain. In the 40–49 years group, neuropathic and nociceptive pain were equally distributed, with 12 cases each. Among those aged 50–59 years, 5 had neuropathic pain and 7 had nociceptive pain. In participants aged ≥60 years, 2 had neuropathic pain and 3 had nociceptive pain.

Among patients with mild VAS scores (1–3), 2 had neuropathic pain and 8 had nociceptive pain. In the moderate pain group (VAS 4–6), 9 patients had neuropathic pain and 18 had nociceptive pain. Among those with severe pain (VAS 7–10), 14 had neuropathic pain and 11 had nociceptive pain. Thus, neuropathic pain was most frequently associated with severe pain intensity. Nociceptive pain was more common in the mild and moderate pain categories. Kim Jin-Hwan

*et al*13 reported. The prevalence of NP was higher in patients who had pain based on radiological and neurological findings (59.0%; $p < 0.01$) and in patients who had severe pain (49.0%; $p < 0.01$). There were significant mean differences in EQ-5D (NP group vs. non-NP group: 0.4 ± 0.3 vs. 0.5 ± 0.3 ; $p < 0.01$) and QBPDS (NP group vs. non-NP group: 45.8 ± 21.2 vs. 36.3 ± 20.2 ; $p < 0.01$) scores. In the multiple linear regression, patients with NP showed lower EQ-5D ($\beta = -0.1$; $p < 0.01$) and higher QBPDS ($\beta = 7.0$; $p < 0.01$) scores than those without NP.

CONCLUSION

The present study concluded that neuropathic pain is a common component among patients who were suffering from chronic low back pain. 40.32% of participants showed neuropathic pain according to the DN4 questionnaire, while 59.68% had nociceptive pain. Neuropathic pain was more frequently observed among patients with pain radiating below the knee, which represents that distal radiation is associated with a greater neuropathic component. The study also demonstrated that neuropathic pain was more commonly associated with severe pain intensity, whereas nociceptive pain was more with patients having mild and moderate pain. The highest number of neuropathic pain cases was observed in the 40–49 years age group. Our study highlights the importance of routinely identifying the neuropathic component in patients with chronic low back pain, mainly in those presenting with distal radiation and severe pain.

REFERENCES

1. Ahmad, M.R. and R. Hardiyanti. "Mengenal NYERI NEUROPATIK AKUT PASCA SEKSIO SESAR." *J Anestesi Obstet Indones.*, vol. 4, no. 2, 2021, pp. 140–151. <https://doi.org/10.47507/obstetri.v4i2.75>.
2. Amalia, A.F. *et al.* "Profil Nyeri di Poliklinik Saraf RSUP Prof. Dr. R. D. Kandou Manado Periode 1 Januari 2014 – 31 Desember 2014." *e-Clinic*, vol. 4, no. 2, 2016. <https://ejournal.unsrat.ac.id/index.php/eclinic/article/view/14593>.
3. Freynhagen, R. *et al.* "PainDETECT: A New screening questionnaire to identify neuropathic components in patients with back pain." *Current Medical Research and Opinion*, vol. 22, no. 10, 2006, pp. 1911–1920. <https://doi.org/10.1185/030079906X132488>.
4. Hikmah, M. *et al.* "Pengaruh Kompres Hangat Jahe (*Zingiber officinale*) terhadap Penurunan Skala Nyeri pada Pasien Low Back Pain di Rumah Sakit Bakti Timah Karimun." *DIAGNOSA: Jurnal Ilmu Kesehatan dan Keperawatan*, vol. 2, no. 2, 2024, pp. 1–12. <https://publikasi.medikasuherman.ac.id/index.php/jikimds/article/view/115>.
5. Harrison, S.A. *et al.* "Prevalence, characteristics and clinical course of neuropathic pain in primary care patients consulting with low back-related leg pain." *Clinical Journal of Pain*, vol. 36, no. 11, 2020, pp. 813–824. <https://doi.org/10.1097/AJP.0000000000000879>.
6. Farid, F. *et al.* "Angka Kejadian Low Back Pain (LBP) pada Mahasiswa Fakultas Kedokteran Universitas Hasanuddin Angkatan 2019." *J Sci Res Dev.*, vol. 5, no. 1, 2023, pp. 77–85. <https://doi.org/10.56670/jsrd.v5i1.101>.
7. Hanifa, E. *et al.* "Hubungan Beban Kerja Fisik dengan Kejadian low back pain (LBP) pada Kuli Panggul Beras di Pasar Induk Gedebage Bandung." *J Integr Kesehat Sains*, vol. 2, no. 2, 2020, pp. 122–125. <http://ejournal.unisba.ac.id/index.php/jiks>.
8. Kementerian Kesehatan RI. *Laporan Nasional Riskesdas 2018*. Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan Republik Indonesia, 2019. ISBN 978-602-373-118-3. <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/>.
9. Sakai, Y. *et al.* "Neuropathic pain in elderly patients with chronic low back pain and effects of pregabalin: a preliminary study." *Asian Spine Journal*, vol. 9, no. 2, 2015, pp. 254–262. <https://doi.org/10.4184/asj.2015.9.2.254>.
10. Margareta, K. *et al.* "Indonesian Version of the Pain Detect Questionnaire in the Assessment of Neuropathic Pain: A Validity and Reliability Study." *J Sinaps*, vol. 4, no. 2, 2021, pp. 1–9. <http://jurnalsinaps.com/index.php/sinaps/article/view/141>.
11. Bener, A. *et al.* "Prevalence and correlates of low back pain in primary care: What are the contributing factors in a rapidly developing country?" *Asian Spine Journal*, vol. 8, no. 3, 2014, pp. 227–236. <https://doi.org/10.4184/asj.2014.8.3.227>.
12. Kaur, K. "Prevalensi Keluhan Low Back Pain (LBP) pada Petani di Wilayah Kerja UPT Kesmas Payangan Gianyar April 2015." *Intisari Sains Medis*, vol. 5, no. 1, 2016, pp. 49–59. <https://doi.org/10.15562/ism.v5i1.35>.
13. Kim, J.H. *et al.* "Prevalence of neuropathic pain and patient-reported outcomes in korean adults with chronic low back pain resulting from neuropathic low back pain." *Asian Spine Journal*, vol. 11, no. 6, 2017, pp. 917–927. <https://doi.org/10.4184/asj.2017.11.6.917>.
14. Attal, N. *et al.* "The neuropathic components of chronic low back pain: a prospective multicenter study using the DN4 questionnaire." *The Journal of Pain*, vol. 12, no. 10, 2011, pp. 1080–1087. <https://doi.org/10.1016/j.jpain.2011.05.006>.
15. Hassan, A.E. *et al.* "Prevalence of neuropathic pain among patients suffering from chronic low back pain in Saudi Arabia." *Saudi Medical Journal*, vol. 25, no. 12, 2004, pp. 1986–1990.SS