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Original Article

Efficacy of Pregabalin Alone and in Combination with Lacosamide in Pain Management of Diabetic Neuropathy

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Abstract

Background: Neuropathy involves the progressive loss of peripheral nerve function, typically beginning with nerves that innervate the toes and advancing proximally. Diabetes mellitus is the leading cause of peripheral neuropathies globally. While pregabalin has been widely used for managing painful diabetic peripheral neuropathy (DPN), recent research suggests a potential role for lacosamide in enhancing pain control.

Objective: The aim of this study was to compare the effectiveness of pregabalin monotherapy versus a combination of pregabalin and lacosamide in the pain management of diabetic neuropathy.

Methodology: This randomized clinical trial included 134 patients divided equally into two groups: Group A received pregabalin 150 mg daily for six weeks, and Group B received pregabalin 100 mg combined with lacosamide 100 mg daily for the same duration.

Results: Group A consisted of 27 males (40.3%) and 40 females (59.7%), while Group B included 19 males (28.4%) and 48 females (71.6%). The mean age was 55.63 ± 12.76 years for Group A and 54.12 ± 11.14 years for Group B. Pre- and post-treatment Visual Analog Scale (VAS) scores showed significant improvement: Group A had a mean post-treatment score of 3.07 ± 1.32, and Group B had 2.30 ± 1.16 ($p < 0.05$). Treatment was effective in 58.2% of Group A and 80.6% of Group B ($p < 0.05$).

Conclusion: Both pregabalin alone and its combination with lacosamide were effective in reducing pain in DPN patients. However, the combination therapy showed greater efficacy, suggesting a potential benefit of adjunctive lacosamide. Further studies are needed to confirm these findings.

Keywords: Diabetic Peripheral Neuropathy, Lacosamide, Neuropathic Pain, Pregabalin, Visual Analog Scale.

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Introduction

Neuropathy is characterized by the functional loss of peripheral nerve fibers, typically beginning with distal nerves such as those innervating the toes and progressing to involve more proximal nerves. The etiology of neuropathy is multifactorial, with contributing factors including metabolic disorders, alcohol consumption, autoimmune diseases, hereditary conditions, chemotherapy, and the use of various medications [1]. It is one of the most prevalent neurological disorders globally, with an estimated prevalence of approximately 12% across all age groups and up to 30% in individuals over 50 years [2]. Approximately 25–36% of peripheral neuropathies are classified as idiopathic [2]. Some studies have further suggested that patients in the United States diagnosed with idiopathic neuropathy may have a threefold increased risk of developing Alzheimer's disease [3,4].

Diabetes mellitus, a metabolic disorder characterized by elevated blood glucose levels, manifests as either type 1 (insulin deficiency) or type 2 (insulin resistance). Poor glycemic control in diabetes can lead to numerous complications, including microvascular complications such as diabetic nephropathy, retinopathy, and neuropathy [5]. Diabetic peripheral neuropathy (DPN) is among the most common of these, affecting approximately 20–30% of patients with diabetes [5]. It primarily affects Aδ and C nerve fibers responsible for pain and temperature perception. Injury to Aα and Aβ fibers may result in the loss of proprioception and vibration sense [6]. DPN is predominantly diagnosed clinically. Patients often present with diffuse, persistent pain lasting several weeks. If left untreated, DPN may progress to peripheral vascular disease, increasing the risk of ulceration and gangrene [7].

The pathophysiology of DPN remains incompletely understood, with multiple theories proposed to explain its mechanisms. Moreover, treatment options remain largely symptomatic rather than curative. Despite ongoing research, a universally effective therapy for DPN has yet to be established [8]. Current pharmacological treatments focus on symptom relief and include agents such as pregabalin, gabapentin, and serotonin-norepinephrine reuptake inhibitors (SNRIs), which are widely considered first-line options for DPN management [9].

Pregabalin was first synthesized in the early 1990s and introduced for clinical use in 2004 for the treatment of diabetic neuropathy in both the United States and Europe [10,11]. The American Academy of Neurology and the American Academy of Physical Medicine and Rehabilitation endorse pregabalin for its analgesic efficacy and tolerability in managing DPN [12]. More recently, lacosamide, a novel sodium channel modulator, has garnered interest for its potential role in neuropathic pain control. While it has demonstrated efficacy in animal models of pain, its effectiveness in treating neuropathic pain in humans remains inadequately explored [13]. One clinical study investigating lacosamide for nociceptor-induced pain showed promise but was prematurely discontinued [14].

Given the limited data available on lacosamide's role in DPN, our study aimed to compare the effectiveness of pregabalin monotherapy versus a combination of pregabalin and lacosamide in reducing neuropathic pain in diabetic patients. Pregabalin remains a commonly prescribed agent for DPN; however, evaluating the added value of lacosamide may offer new insights into optimizing pain control. This research seeks to address a critical gap in the literature and guide clinicians toward more effective treatment strategies for DPN.

Methodology

Trial Design

This was a single-center, randomized, open-label, parallel-group clinical trial conducted over a duration of one year at the Department of Neurology, Swat Medical Complex and Teaching Hospital, Pakistan. The study was designed to evaluate the efficacy of pregabalin alone versus a combination of pregabalin and lacosamide in the management of painful diabetic peripheral neuropathy. The trial adhered to the principles of

the Declaration of Helsinki and Good Clinical Practice guidelines.

Participants

A total of 134 adult patients were enrolled through non-probability sampling from both the Outpatient Department (OPD) and the Emergency Department. Eligible participants were aged between 18 and 75 years, had a confirmed diagnosis of either type 1 or type 2 diabetes mellitus, and had experienced symptoms of painful diabetic peripheral neuropathy (DPN) for at least six months with a baseline pain score of ≥4 on the Visual Analog Scale (VAS). Exclusion criteria included refusal to provide informed consent, presence of clinically significant medical or psychiatric illnesses (such as chronic renal disease, hepatic dysfunction, or uncontrolled hypertension), current use of anticonvulsants, antiepileptics, or local anesthetics, a history of alcohol or drug abuse, and pregnancy or lactation. A strict application of exclusion criteria was followed to minimize bias.

Interventions

Participants were randomly assigned to one of two treatment groups. Group A received pregabalin 150 mg once daily for six weeks. Group B received a combination therapy comprising pregabalin 100 mg and lacosamide 100 mg once daily for six weeks. Both treatments were initiated after a baseline clinical evaluation, and patients were counseled in detail regarding their assigned treatment regimen, expected benefits, and possible side effects. Neurological examinations were conducted at baseline and follow-up, including assessments for vibration sensation (using a 256 Hz tuning fork on bony prominences such as the medial malleolus and distal first metatarsal), proprioception (by passive movement of the great toe), and pinprick sensation.

Outcomes

The primary outcome was the reduction in pain intensity as measured by the Visual Analog Scale (VAS) at six weeks post-treatment initiation. A ≥50% reduction in the VAS score from baseline was defined as a clinically significant improvement. Secondary outcomes included changes in neurological examination findings and documentation of any adverse effects related to treatment.

Sample Size

A total of 134 patients were enrolled in the trial, with 67 patients allocated to each treatment group. The sample size was deemed adequate for detecting clinically meaningful differences in pain outcomes between the two groups, considering the expected effect size and variance based on prior literature.

Randomisation

Randomization was performed using the OpenEpi online software (www.openepi.com), employing a random number generator to allocate participants to Group A or Group B in a 1:1 ratio. This ensured that each participant had an equal chance of being assigned to either treatment arm, minimizing allocation bias.

Blinding

This was an open-label study; therefore, no blinding was applied. Both the investigators and participants were aware of the assigned treatments. However, outcome assessment based on VAS scoring was standardized, and assessors adhered to a uniform protocol to reduce subjective bias.

Ethics

Ethical approval for the study was obtained from the Institutional Review Boards of Swat Medical College and Saidu Medical College (Approval Number: 194-EBR/024). Written informed consent was obtained from all participants before enrollment. Participants were fully informed about the study's purpose, procedures, potential risks, and benefits.

Statistical Methods

All collected data were first recorded in a structured Google Forms-based data collection sheet and subsequently exported to IBM SPSS version 26.0 for statistical analysis. Descriptive statistics were used to summarize the demographic and clinical characteristics of the participants. Means and standard deviations were calculated for

continuous variables such as age and VAS scores, while frequencies and percentages were reported for categorical variables such as gender and treatment response. Inferential statistics included paired t-tests for within-group comparisons of pre- and post-treatment VAS scores, and chi-square tests were used to compare the efficacy between the two treatment groups. A p-value of <0.05 was considered statistically significant.

Results

Recruitment

A total of 134 patients with painful diabetic peripheral neuropathy were recruited from the Outpatient and Emergency Departments of Swat Medical Complex and Teaching Hospital over a one-year period. Eligible participants were randomly assigned to one of two intervention arms: Group A received pregabalin 150 mg once daily for 6 weeks, while Group B received a combination therapy of pregabalin 100 mg and lacosamide 100 mg once daily for the same duration. Recruitment and randomization were performed using OpenEpi software, ensuring equal allocation (1:1) into both groups (n = 67 per group).

Baseline Data

The mean age of participants in Group A was 55.63 ± 12.76 years, whereas in Group B it was 54.12 ± 11.14 years. Gender distribution in Group A consisted of 27 males (40.3%) and 40 females (59.7%), while Group B included 19 males (28.4%) and 48 females (71.6%). At baseline, the mean Visual Analog Scale (VAS) score was 4.04 ± 1.12 cm in Group A and 4.70 ± 0.92 cm in Group B, indicating a slightly higher pain level in the combination therapy group prior to treatment initiation.

Numbers Analysed

During the six-week follow-up period, a total of five patients were lost to analysis: in Group A, two patients were lost to follow-up and one patient discontinued treatment; in Group B, one patient was lost to follow-up and one patient died due to unrelated causes. As a result, final analysis was conducted on 129 patients (Group A: n = 64; Group B: n = 65). These details are illustrated in the CONSORT diagram (Figure 1).

Outcomes and Estimation

Following six weeks of treatment, the mean VAS score in Group A (pregabalin monotherapy) decreased from 4.04 ± 1.12 cm to 3.07 ± 1.32 cm, while in Group B (combination therapy), the score reduced from 4.70 ± 0.92 cm to 2.30 ± 1.16 cm. The reduction in pain was statistically significant in both groups, with a greater magnitude observed in the combination therapy group ($p = 0.002$). Treatment efficacy, defined as a ≥50% reduction in VAS score, was achieved in 58.2% of patients in Group A compared to 80.6% in Group B, demonstrating a significantly higher response rate in the combination therapy group ($p < 0.05$). These findings are summarized in Table 1.

Ancillary Analyses

Subgroup analyses by gender and age were conducted descriptively but did not reveal significant interactions affecting treatment efficacy. While women were predominant in both groups, the treatment response did not significantly differ by sex. Additional subgroup-based efficacy estimations were limited due to sample size constraints.

Harms

No serious adverse drug reactions were reported during the treatment period. One death occurred in Group B; however, it was deemed unrelated to the intervention based on clinical documentation. Minor side effects such as dizziness and mild gastrointestinal discomfort were reported in both groups but were self-limiting and did not necessitate treatment discontinuation.

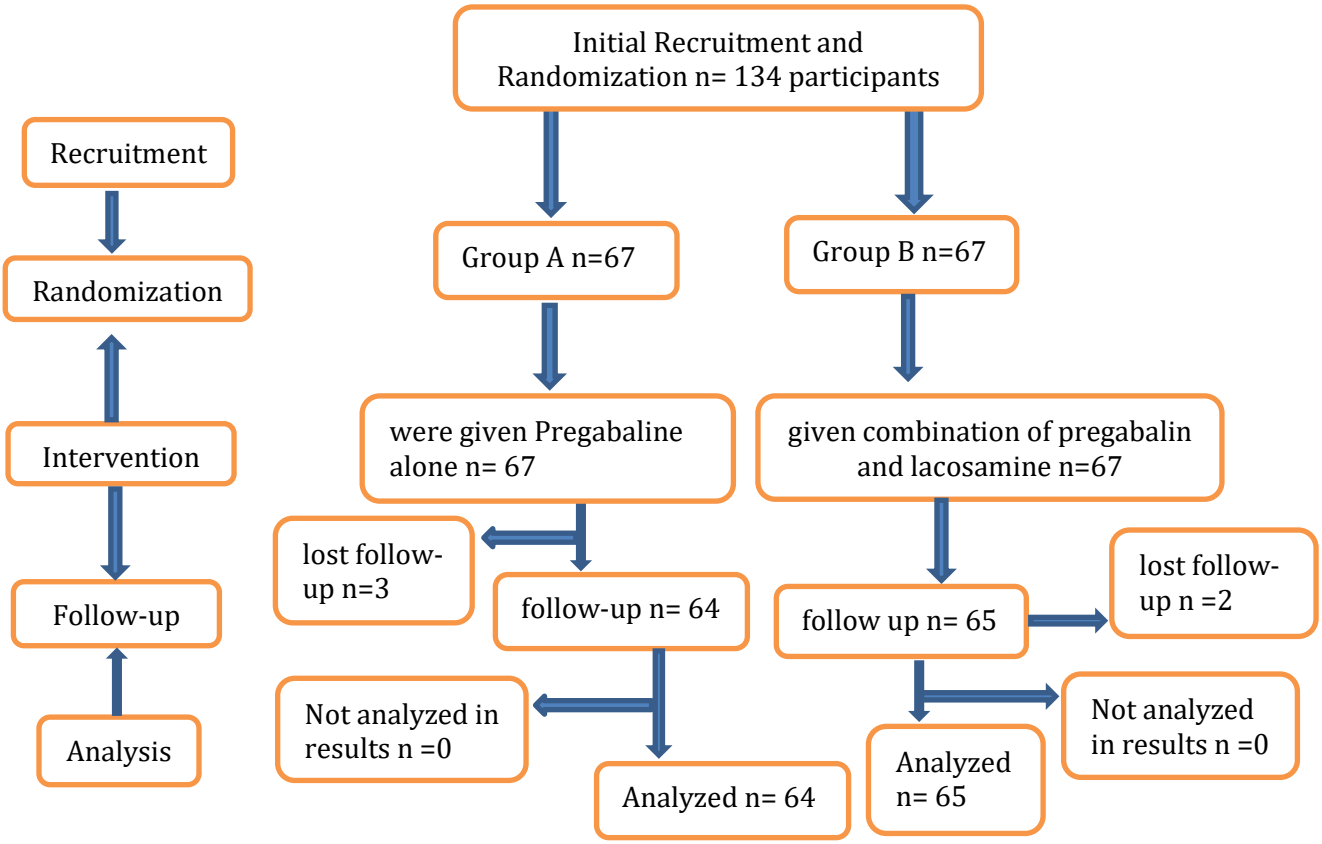


Figure 1: Consort Chart

Table 1: Descriptive Analysis

	Groups	**Male**	**Female**
Mean age and Gender Wise Distribution n= 134 mean age = 54.12 ± 11.14 Years	Group A Mean age = 55.63 ±12.76 years	n = 27 (40.3%)	n = 40 (59.7%)
	Group B Mean age = 54.12 ± 11.14 Years	n = 19 (28.4%)	n = 48 (71.6%)
Visual analogue score (VAS) of two groups before and after treatment. p = 0.002	Groups	Before Treatment	After Treatment
	Group A	4.04 ±1.12 cm	3.07 ±1.32 cm
	Group B	4.70 ±0.92 cm	2.30 ±1.16 cm

Discussion

Diabetic peripheral neuropathy (DPN) is one of the most common and debilitating complications associated with diabetes mellitus [19]. In Pakistan, approximately 26.5% of diagnosed diabetic patients experience diabetic neuropathies, representing a significant public health concern that affects patient quality of life and places a substantial burden on the healthcare system [20]. DPN is also associated with serious complications, including foot ulcers and limb deformities, which further compound morbidity and healthcare costs [19]. In this randomized clinical trial, we compared the efficacy of pregabalin alone versus a combination of pregabalin and lacosamide in the management of painful diabetic neuropathy.

The mean age of patients in Group A (pregabalin monotherapy) and Group B (combination therapy) was 55.63 ± 12.7 years and 54.12 ± 11.1 years, respectively. These findings are consistent with previous studies reporting mean ages around 59.55 ± 9.48 years [21] and 53.6 ± 12.6 years [22] in patients presenting with diabetic neuropathies. The baseline mean Visual Analog Scale (VAS) score before treatment initiation was 4.04 ± 1.1 in Group A and 4.70 ± 0.9 in Group B. These values are in line with existing literature that has reported baseline VAS scores above 3 in patients with diabetic neuropathy [23]. For instance, RT Pinzon et al. found mean baseline VAS scores of 5.74 ± 2.16 and 5.46 ± 2.13 in two comparative groups [24]. Some studies report even higher baseline scores ranging from 7 to 10, which may be attributed to factors such as disease duration, glycemic control, type of neuropathy, and coexisting medical conditions [25].

In our trial, six weeks of pregabalin monotherapy led to a reduction in the mean VAS score from 4.04 to 3.07. This aligns with the findings of S. Anwar et al. [20], where the administration of 75 mg pregabalin for three months resulted in a decrease in VAS score from 7.30 ± 1.59 to 5.20 ± 1.58. In our study, pregabalin 150 mg daily showed effectiveness in 58.2% of participants, which is comparatively lower than the 74% efficacy reported by I. Shah et al. [23], who used a higher dose of 300 mg for a longer treatment duration (four months). This difference suggests that both the dosage and duration of pregabalin therapy influence treatment outcomes.

The combination therapy group (Group B), which received pregabalin 100 mg and lacosamide 100 mg daily, demonstrated superior outcomes. The mean VAS score decreased significantly from 4.70 ± 0.9 to 2.30 ± 1.16, with 80.6% of participants achieving significant pain reduction. Lacosamide, a newer antiepileptic agent, has been shown in literature to be safe and effective for managing pain in diabetic neuropathy [19]. Its efficacy has also been supported by a meta-analysis conducted by Jingxuan L. et al. [24], which confirms its role in the treatment of painful peripheral neuropathies.

Limitations

Despite the encouraging results, our study had a few limitations. There is still limited high-quality research evaluating the use of lacosamide specifically in DPN. Additionally, the loss of five participants due to follow-up attrition and one unrelated death may have slightly impacted the outcome estimates. Larger, multicenter trials are needed to further explore the synergistic effects of these medications, optimal dosing regimens, and the long-term safety profile of lacosamide when used in combination therapy for diabetic neuropathy.

Conclusion

This study demonstrated that both pregabalin monotherapy and combination therapy with pregabalin plus lacosamide are effective in reducing neuropathic pain in patients with diabetic peripheral neuropathy. However, the combination therapy produced greater pain reduction, as reflected by a more substantial decrease in VAS scores and a higher percentage of treatment responders. These findings suggest that lacosamide may enhance the therapeutic efficacy of pregabalin when used together. Further large-scale, long-duration trials are warranted to validate these results and to define optimal treatment protocols for managing painful diabetic neuropathy.

Authors' Contributions

All authors meet the ICMJE criteria for authorship. They have reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Author 1: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 2: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 3: Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 4: Analysis and interpretation of data, critical revision, final approval, agreed to be accountable for all the work.
Author 5: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 6: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 7: Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 8: Analysis and interpretation of data, critical revision, final approval, agreed to be accountable for all the work.

References

1. Tokuçoğlu F, Diniz G. Peripheral neuropathies. InClues for differential diagnosis of neuromuscular disorders 2023 Aug 23 (pp. 125-168). *Cham: Springer International Publishing.* https://doi.org/10.1007/978-3-031-33924-0_10
2. Castelli G, Desai KM, Cantone RE. Peripheral neuropathy: evaluation and differential diagnosis. *American family physician.* 2020 Dec 15;102(12):732-9.
3. Lehmann HC, Wunderlich G, Fink GR, Sommer C. Diagnosis of peripheral neuropathy. *Neurological research and practice.* 2020 Dec; 2:1-7. https://doi.org/10.1186/s42466-020-00064-2
4. So WZ, Wong NS, Tan HC, Lin MT, Lee IX, Mehta JS, et al. Diabetic corneal neuropathy as a surrogate marker for diabetic peripheral neuropathy. *Neural Regeneration Research.* 2022 Oct 1;17(10):2172-8. https://doi.org/10.4103/1673-5374.327364
5. Røikjer J, Ejskjaer N. Diabetic peripheral neuropathy: diagnosis and treatment. *Current Drug Safety.* 2021 Mar 1;16(1):2-16. https://doi.org/10.2174/1574886315666200731173113
6. Yang K, Wang Y, Li YW, Chen YG, Xing N, Lin HB, et al. Progress in the treatment of diabetic peripheral neuropathy. *Biomedicine & Pharmacotherapy.* 2022 Apr 1;148:112717. https://doi.org/10.1002/cbdv.202400910
7. Price R, Smith D, Franklin G, Gronseth G, Pignone M, David WS, et al. Oral and topical treatment of painful diabetic polyneuropathy: practice guideline update summary: report of the AAN guideline subcommittee. *Neurology.* 2022 Jan 4;98(1):31-43. https://doi.org/10.1212/WNL.0000000000013038
8. Khdour MR. Treatment of diabetic peripheral neuropathy: a review. *Journal of Pharmacy and Pharmacology.* 2020 Jul;72(7):863-72. https://doi.org/10.1111/jphp.13241
9. Jingxuan L, Litian M, Jianfang F. Different drugs for the treatment of painful diabetic peripheral neuropathy: a meta-analysis. *Frontiers in Neurology.* 2021 Oct 29;12:682244. https://doi.org/10.3389/fneur.2021.682244d
10. Hange N, Poudel S, Ozair S, Paul T, Nambakkam M, Shrestha R, et al. Managing chronic neuropathic pain: recent advances and new challenges. *Neurology Research International.* 2022;2022(1): 8336561. https://doi.org/10.1155/2022/8336561
11. Carmland ME, Kreutzfeldt MD, Holbech JV. The effect of lacosamide in peripheral neuropathic pain: A randomized, double - blind, placebo - controlled, phenotype - stratified trial. *European Journal of Pain.* 2024 Jan;28(1):105-19. https://doi.org/10.1002/ejp.2165
12. Merheb D, Dib G, Zerdan MB, Nakib CE, Alame S, Assi HI. Drug-induced peripheral neuropathy: diagnosis and management. *Current Cancer Drug Targets.* 2022 Jan 1;22(1):49-76. https://doi.org/10.2174/1568009621666210720142542
13. Alwash S, McIntyre D, Mamun A. The pre-pregnancy fasting blood glucose, glycated hemoglobin and lipid profiles as blood biomarkers for gestational diabetes mellitus: evidence from a multigenerational cohort study. *The Journal of Maternal-Fetal & Neonatal Medicine.* 2023 Dec 31;36(1):2195524. https://doi.org/10.1080/14767058.2023.2195524

14. Raja SN, Carr DB, Cohen M. The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. *Pain.* 2020 Sep 1;161(9):1976-82. https://doi.org/10.1097/j.pain.0000000000001939
15. Comparison of the efficacy and safety of duloxetine and gabapentin in diabetic peripheral neuropathic pain: a meta-analysis. Jiang L, Xiong Y, Cui J. *Contrast Media Mol Imaging.* 2022; 2022:4084420. https://doi.org/10.1155/2022/4084420
16. Akhtar S, Hassan F, Saqlain SR, Ali A, Hussain S. The prevalence of peripheral neuropathy among the patients with diabetes in Pakistan: a systematic review and meta-analysis. *Scientific Reports.* 2023 Jul 20;13(1):11744. https://doi.org/10.1038/s41598-023-39037-1
17. Hunaifi I, Agustriadi IG, Asmara IG, Budyono C. The correlation between HbA1c and neuropathy disability score in type 2 diabetes. *Acta Medica Indonesiana.* 2021 Jul 11;53(2):164.
18. Davoudi M, Rezaei P, Rajaeiramsheh F, Ahmadi SM, Taheri AA. Predicting the quality of life based on pain dimensions and psychiatric symptoms in patients with Painful diabetic neuropathy: a cross-sectional prevalence study in Iranian patients. *Health and Quality of Life Outcomes.* 2021 Dec; 19:1-9. https://doi.org/10.1186/s12955-021-01697-w
19. Srinivasan A, Dutta P, Bansal D, Chakrabarti A, Bhansali AK, Hota D. Efficacy and safety of low - dose naltrexone in painful diabetic neuropathy: A randomized, double - blind, active - control, crossover clinical trial. *Journal of Diabetes.* 2021 Oct;13(10):770-8. https://doi.org/10.1111/1753-0407.13202
20. Pinzon RT, Wijaya VO, Veronica V. The benefits of add-on therapy of vitamin D 5000 IU to the vitamin D levels and symptoms in diabetic neuropathy patients: A randomized clinical trial. *Journal of Pain Research.* 2021 Dec 19:3865-75. https://doi.org/10.2147/JPR.S341862
21. Sun H, He M, Pang J, Guo X, Huo Y, Ma J. Continuous lumbar sympathetic blockade enhances the effect of lumbar sympatholysis on refractory diabetic neuropathy: a randomized controlled trial. *Diabetes Therapy.* 2020 Nov;11:2647-55. https://doi.org/10.1007/s13300-020-00918-7
22. Anwar S, Hassan MW, Tirmzi F, Saeed MU, Aslam M. Effectiveness of platelet rich plasma (PRP) treatment and its comparison with pregabalin in painful diabetic polyneuropathy: A randomized controlled clinical trial. Anaesthesia, *Pain & Intensive Care.* 2024 Feb 4;28(1):44-9. https://doi.org/10.35975/apic.v28i1.2280
23. Shah I, Ahmad W, Islam M, Jan B, Haq EU, Mahmood J, et al. A Prospective Observational Study Comparing the Efficacy and Safety of Duloxetine and Pregabalin in Diabetic Peripheral Neuropathic Pain. *Cureus.* 2022 Sep;14(9). https://doi.org/10.7759/cureus.28683
24. Mujeeb-ul-Rehman ZA, Mujtaba G, Ali A, Shah S, Singh J. Role of Lacosamide in Diabetic Neuropathy: An Experience at Tertiary Care Hospital in Rural Sindh. *Pakistan Journal of Medical & Health Sciences.* 2022 Dec 29;16(11):293-. https://doi.org/10.53350/pjmhs20221611293
25. Jingxuan L, Litian M, Jianfang F. Different drugs for the treatment of painful diabetic peripheral neuropathy: a meta-analysis. *Frontiers in Neurology.* 2021 Oct 29; 12:682244. https://doi.org/10.3389/fneur.2021.682244