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# Effectiveness and Safety of Tapentadol in Managing Diabetic Neuropathic Pain: A Systematic Review

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***Author's contribution***

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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***Systematic Review Article***

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## ABSTRACT

**Introduction:** Tapentadol, a μ-opioid agonist and norepinephrine reuptake inhibitor is an effective medication for a wide variety of chronic pain conditions, including back pain, cancer-related pain, and arthritic pain. More recently, tapentadol extended-release has been demonstrated to be effective in the management of painful diabetic neuropathy, an often debilitating condition affecting approximately one-third of all patients with diabetes.
**Aim of the Study:** To identify the efficacy of Tapentadol in the management of patients with Diabetic Neuropathic Pain and to compare the safety of Tapentadol with other drugs used in the management of diabetic neuropathy.
**Materials and Methods:** Up to March 2023, PubMed, Cochrane CENTRAL, Web of Science, and Scopus were searched for potentially relevant studies that met the inclusion criteria. We adhered to PRISMA checklist items for reporting systematic reviews.
**Results:** Three studies included 731 patients suffering from Diabetic polyneuropathy with a mean age of 60.9 years and a mean follow-up duration of 9.3 weeks. The mean difference between the

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Tapentadol and placebo is 0.97(95% CI [0.59, 1.34]) with the results in favour of Tapentadol with a total sample of 374 patients in the Tapentadol group and 357 patients in the Placebo group.
**Conclusion:** Despite the efficacy of Tapentadol in PDN, the toxicity profile and higher incidence of withdrawal rate should give attention away its use in future research.

*Keywords: Chronic pain; neuropathic pain; pharmacology; analgesia; pain management.*

## 1. INTRODUCTION

The prevalence of diabetic neuropathy (DN) in people with diabetes mellitus (DM) varies widely from 30–50%, depending on the diagnostic criteria utilized [1].

Infrequent types of diabetic neuropathy include asymmetric or localized forms, such as diabetic muscle atrophy, trunk radiculopathy, and compression palsy, with chronic, distal, symmetric sensorimotor polyneuropathy being the most prevalent. [2].

Systematic, step-by-step treatment is recommended for patients with diabetic neuropathy, including but not limited to glycemic management and metabolic syndrome control, foot care and safety education, and symptomatic pain medication if necessary [3].

Opioids are the most often recommended medicine for the management of chronic pain associated with this condition; nevertheless, patients do not have a strong attachment to the therapy because of the negative side effects of these medications. [4]

Tapentadol is a novel family of centrally active analgesics that acts as an agonist at mu-opioid receptors (MOR) and an inhibitor of noradrenaline reuptake (NRI). Patients suffering from moderate-to-severe chronic pain due to cancer, osteoarthritis of the knee, low back pain, and painful diabetic peripheral neuropathy have been shown to benefit from tapentadol PR in phase 3 trials [5]. Tapentadol, which was just recently approved by the FDA for the management of pain associated with peripheral diabetic neuropathy, is caused by its double action an effective management of the pain, with diminished of adverse effects that are commonly presented with opioids. Tapentadol was developed to treat pain associated with diabetic peripheral neuropathy. People who have moderate renal illness or minor liver disease can take it with little to no adverse effects, as can elderly patients. [4] Tapentadol is an oral, centrally-acting analgesic that combines opioid and noradrenergic qualities [6-8]. These features give it the potential to be useful in treating a broad variety of painful disorders, particularly in situations in which an NP component is either present or cannot be ruled out. Tapentadol has been shown to be useful in the treatment of neuropathy associated with diabetic peripheral neuropathy and persistent low back pain in clinical trials that were randomized and controlled [5]. Subjects on tapentadol were shown to have a lower risk of withdrawal symptoms compared to those on oxycodone (from 17% to 29%) in a single trial that compared the two drugs, but no differences were detected when the Subjective Opiate Withdrawal Scale was employed [9].

Tapentadol's positive effects on chronic pain due to DNP are promising in light of the high social cost and persistent nature of severe pain. When compared to other opioid-based drugs, tapentadol offers superior cost-effectiveness, tolerance, and clinical outcomes [2].

Research on tapentadol's efficacy relative to other analgesics is still needed so that future therapies can be customized to the specific needs of each patient [2].

Systematic reviews are useful for aggregating information from many sources in areas where there are either fewer patients or contradictory findings, such as with diabetic neuropathy medicines. In this study, the aim was to identify the efficacy of Tapentadol in the management of patients with Diabetic Neuropathic Pain and to compare the safety of Tapentadol with other drugs used in the management of diabetic neuropathy. To achieve this, a comprehensive literature search was conducted using a systematic review design. The review was guided by methodological frameworks and used search terms like "tapentadol," "neuropathy," and "diabetes" to select relevant resources. The findings will guide future studies, inform legislation, and create therapeutic recommendations.

## 2. MATERIALS AND METHODS

To conduct this systematic review and meta-analysis, we followed the PRISMA statement

criteria as well as the Cochrane Handbook's systematic review guidelines [10].

## 2.1 Literature Search Strategy

The Literature search strategy entailed making use of PubMed, Cochrane CENTRAL, Web of Science, and Scopus for potentially relevant studies that met the inclusion criteria. This search strategy was also used for the database search (Tapentadol) AND ((Neuropathic pain OR neuropathy) AND (Diabetes OR Diabetic)).

## 2.2 Eligibility Criteria

**Inclusion criteria:**

**Population:** Adult diabetic Patients (>18 years) suffering from diabetic neuropathy

**Intervention:** Tapentadol with any dose or regimen.

**Comparator:** any other opioids or placebo

**Outcomes:** Efficacy in terms of pain reduction, Safety in terms of adverse events including nausea and vomiting, and any other reported side effects.

Study design: controlled clinical trials.

**Exclusion criteria:**

(i) conference papers, comments, letters, review papers, and book chapters.
(ii) articles with overlapped data sets
(iii) non-English articles
(iv) Animal studies

## 2.3 Study Selection

The eligibility determination method was standardized. Erosa et al. (2021) evaluated and assessed the obtained findings based on the title and abstract, using predefined inclusion and exclusion criteria. After the search results had been retrieved, the articles underwent two stages of screening (Erosa, Haffey, Mehta, & Gulati, 2021). The first stage was the title and abstract screening. The titles and abstracts of the various papers were reviewed as a preliminary screening. Articles that passed the preliminary screening in the first phase advanced to the full-text screening. All papers were thoroughly reviewed for eligibility.

## 2.4 Data Extraction

Each dataset type was extracted. The following information was derived from the data: 1) Demographic data about the included participants including age, gender, sample size, follow-up time (in months),2) Outcome values of the pain scale before and after treatment, and adverse events including dependence and withdrawal. The adjusted model's outcome measures were retrieved as mean and Standard Deviation (SD).

## 2.5 Quality Assessment

To assess the risk of bias among the included studies, we used Cochrane's risk of bias tool [11] for randomized clinical trials. To determine the likelihood of bias, the Cochrane tool considers the following factors: Patient Randomization, Allocation Concealment, Blinding of participants only (single blinding) or participants and staff (double-blinding), Attrition Bias, Reporting of all outcomes specified in the protocol, Selection Bias, Blinding of outcome assessors to prevent over- and/or under-estimation of outcome values, and other methodological bias

## 2.6 Data Analysis

Statistical analysis was performed utilizing a fixed effect model and a comprehensive meta-analysis (CMA). The data were presented as weighted proportions and risk ratios (RR) with 95% confidence intervals (CI) and were dichotomous (events or no occurrences) [12].

A Q statistic with P 0.1 indicated heterogeneity, and I2 values of 0%, 25%, 50%, and 75% indicated no, low, moderate, and high heterogeneity, respectively; these tests were used to evaluate the visual and statistical heterogeneity across trials [13]. Subgroup analysis and sensitivity analyses were conducted to pinpoint the cause of observed heterogeneity when it was shown to be statistically significant.

# 3. RESULTS

We found 129 articles relevant to our topic. The first screenings (title and abstract) ruled out 115 papers, while the further (full text) screenings ruled out 8 articles. As can be seen in Fig. 1, three papers were included in our systematic review and meta-analysis.

## 3.1 Patient Characteristics

Three studies included 731 patients suffering from Diabetic polyneuropathy with a mean age of 60.9 years [14–16] with a mean duration of follow-up of 9.3 weeks. A summary of included studies is shown in Table 1. Baseline

characteristics for included studies are shown in Table 2. The mean NRS score before and after the treatment is shown in Table 3.

## 3.2 Outcomes

**Mean change of NRS scale after the treatment period:** Three studies presented results of a mean change of the NRS scale after the treatment period. The mean difference between the tapentadol and placebo is 0.97(95% CI [0.59, 1.34]) with the results in favour of tapentadol with a total sample of 374 patients in the Tapentadol group and 357 patients in the Placebo group. There was a heterogeneity of the results (I2=84% P=0.002) as shown in Fig. 2.

This heterogeneity might be due to the difference in the follow-up period duration as Niesteres et al., had a follow-up of four weeks but other studies' duration was 12 weeks. This heterogeneity was resolved with the sensitivity out analysis. The Standardized mean difference was used and the Niesters et al. [16] study was excluded. The standardized mean difference between the tapentadol and placebo was 1.43 (95% CI [1.27, 1.60]) with the results in favour of tapentadol with a total sample of 362 patients in the Tapentadol group and 345 patients in the Placebo group. There was no heterogeneity between the results (I2=0% P=0.39) as shown in Fig. 3.

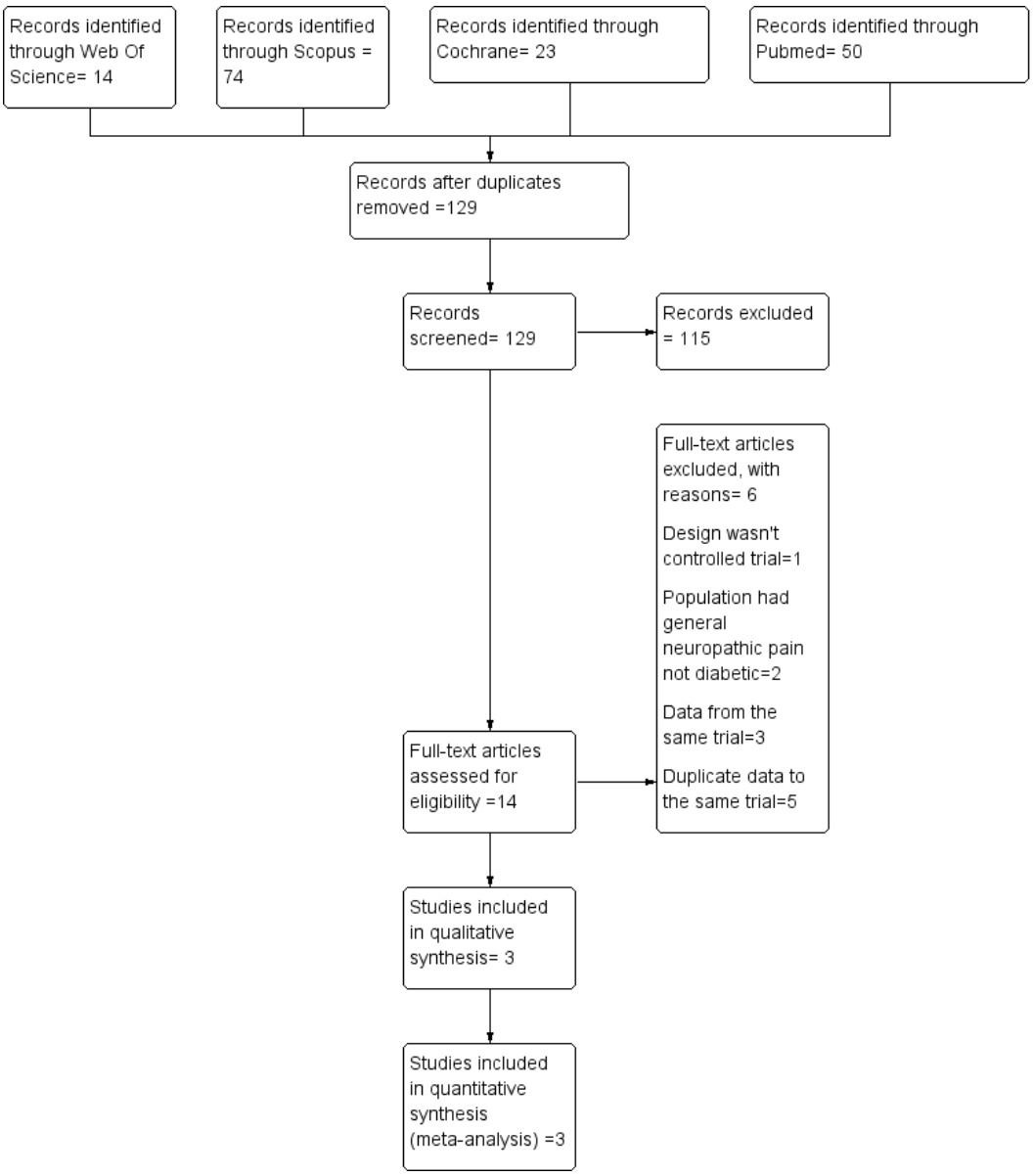


**Fig. 1. PRISMA flow diagram**

**Table 1. Summary of included studies**

| Author/ year | Methods | The primary efficacy endpoint | Results | conclusion |
|---|---|---|---|---|
| **Vinik et al., 2014 [14]** | Adult patients with moderate to severe, painful DPN with symptoms for >6 months and >3 months of analgesic use were titrated to an optimal dose (balancing efficacy and tolerability) of tapentadol ER (100–250 mg bid) during a 3-week open-label period mean change in average pain intensity (recorded twice daily [average pain during previous 12 hours]; 11-point NRS) from the start to Week 12 (LOCF) of the double-blind maintenance phase. | mean change in average pain intensity (recorded twice daily [average pain during previous 12 hours]; 11-point NRS) from the start to week 12 (LOCF) of the double-blind maintenance phase | At the start versus Week 12 of double-blind maintenance, respectively, mean (SD) pain intensity was: tapentadol ER, 3.70 (1.78) versus 4.01 (2.23); placebo, 3.35 (2.17) versus 4.83 (2.60). Mean (SD) change in average pain intensity from the start to week 12 of the double-blind maintenance phase was: tapentadol ER, 0.28 (2.042); placebo, 1.30 (2.428) (least-squares mean difference for tapentadol ER vs placebo, -0.95 [95% CI, -1.415 to -0.493]; P <0.001 favoring tapentadol ER). TEAEs (>10%) reported in the tapentadol ER group during double-blind maintenance were nausea (21.1%) and vomiting (12.7%). | Tapentadol ER (100-250 mg bid) was effective and well tolerated for the management of moderate to severe, neuropathic pain associated with DPN in adults. |
| **Niesters et al., 2014 [16]** | Twenty-four patients with diabetic polyneuropathy (DPN) were randomized to receive daily treatment with tapentadol sustained-release (SR) [average daily dose 433 (31) mg] or placebo for 4 weeks. CPM and OA were measured before and on the last day of treatment. (CPM, an experimental measure of endogenous pain inhibition that gates incoming pain signals as a consequence of a preceding tonic painful stimulus). OA is a test in which a disproportionally large amount of analgesia becomes apparent upon a slight decrease in noxious heat stimulation). | | It shows a clear distinction in pain reduction in weeks 3 and 4 of treatment with greater analgesia in patients treated with tapentadol SR [pain scores at baseline 6.5 (0.6) reduced to 4.8 (0.7) after placebo and 3.9 (0.6) after tapentadol; 4-week treatment effect, P= 0.03]. CPM increased from 9.1 (5.4)% (baseline) to 14.3 (7.2)% (placebo) and 24.2 (7.7)% (tapentadol SR, P<0.001 vs placebo); relief of DPN pain was also greater in patients treated with tapentadol than placebo (P=0.028). Neither placebo nor tapentadol SR treatment affected the magnitude of the OA responses (P=0.78). | Tapentadol's analgesic effect in chronic pain patients with DPN is dependent on the activation of descending inhibitory pain pathways as observed by CPM responses. |
| **Schwartz et al 2011 [15]** | Patients (n = 588) with at least a 3-month history of opioid and/or non-opioid analgesic use for DPN, dissatisfaction with current treatment, and an average pain intensity score of at least 5 on an 11-point | the change in average pain intensity from randomization, determined by twice-daily NRS measurements. | The least-squares mean difference between groups in the change in average pain intensity from the start of double-blind treatment to week 12 was -1.3 (95% confidence interval, -1.70 to -0.92; p < 0.001, | Compared with placebo, tapentadol ER 100-250 mg bid provided a |

| Author/ year | Methods | The primary efficacy endpoint | Results | conclusion |
|---|---|---|---|---|
| | numerical rating scale (NRS; 0 = 'no pain,' 10 = 'pain as bad as you can imagine') were titrated to an optimal dose of tapentadol ER (100-250 mg bid) during a 3-week open-label phase. Subsequently, patients (n = 395) with at least a 1-point reduction in pain intensity were randomized 1:1 to receive a placebo or the optimal fixed dose of tapentadol ER determined during the open-label phase for a 12-week double-blind phase | | tapentadol ER vs. placebo). A total of 60.5% (356/588) of patients reported at least a 30% improvement in pain intensity from the start to the end of the open-label titration phase; of the patients who were randomized to tapentadol ER, 53.6% (105/196) reported at least a 30% improvement from pre-titration to week 12 of the double-blind phase. The most common treatment-emergent adverse events that occurred during double-blind treatment with tapentadol ER included nausea, anxiety, diarrhea, and dizziness. | statistically significant difference in the maintenance of a clinically important improvement in pain 1, 2 and was well-tolerated by patients with painful DPN. |

**Table 2. Baseline characteristics for each arm in each group**

| Author/year | number of patients in each group | | Age | withdrawal |
|---|---|---|---|---|
| **Vinik et al., 2014 [14]** | tapentadol 100-250 mg bid | 166 | 58.5 (10.63) | 46 |
| | placebo | 152 | 59 (9.00) | 45 |
| **Niesters et al., 2014 [16]** | tapentadol 433 mg | 12 | 63 (58–67) | |
| | placebo | 12 | 64 (57–66) | |
| **Schwartz et al 2011 [15]** | tapentadol ER 100-250 mg bid | 196 | 59.9 (10.68) | 29 |
| | placebo | 193 | 60.6 (10.56) | 15 |

**Table 3. Mean NRS score before and after the treatment**

| Author/year | number of patients in each group | | Mean Pain score before the treatment | Mean pain score after the treatment |
|---|---|---|---|---|
| **Vinik et al., 2014 [14]** | tapentadol 100-250 mg bid | 166 | 3.70 (1.78) | 4.01 (2.23) |
| | placebo | 152 | 3.35 (2.17) | 4.83 (2.60) |
| **Niesters et al., 2014 [16]** | tapentadol 433 mg | 12 | 6.5(0.6) | 3.9(0.6) |
| | placebo | 12 | 6.5(0.6) | 4.8(0.7) |
| **Schwartz et al 2011 [15]** | tapentadol ER 100-250 mg bid | 196 | 3.72(0.9) | 3.28(0.9) |
| | placebo | 193 | 3.48(0.9) | 4.26(0.9) |

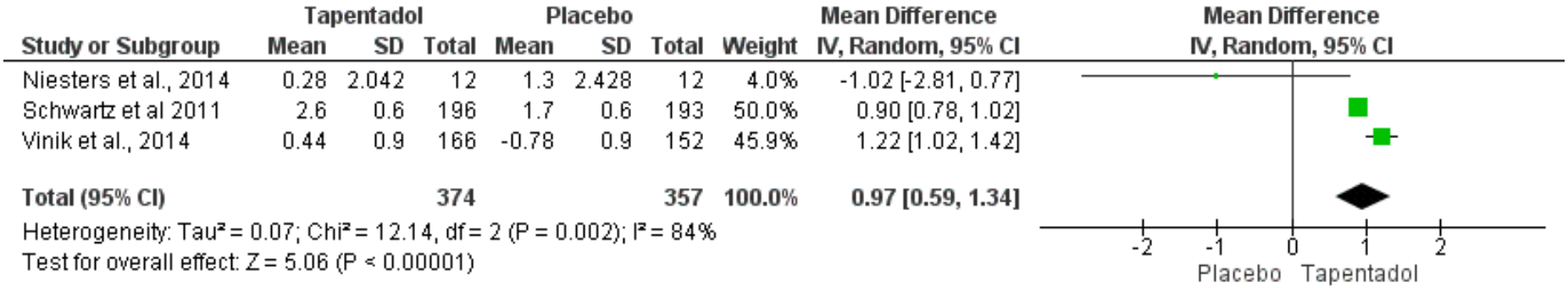


**Fig. 2. Forest plot NRS**

*Source: Niesters et al. [16], Schwartz et al. [15], Vinik et al. [14]*

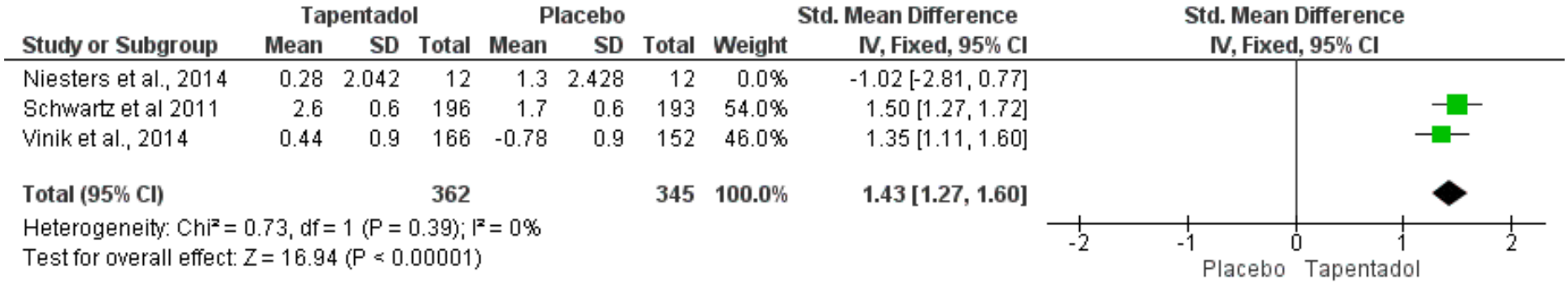


**Fig. 3. Forest plot NRS after sensitivity analysis**

*Source: Niesters et al. [16], Schwartz et al. [15], Vinik et al. [14]*

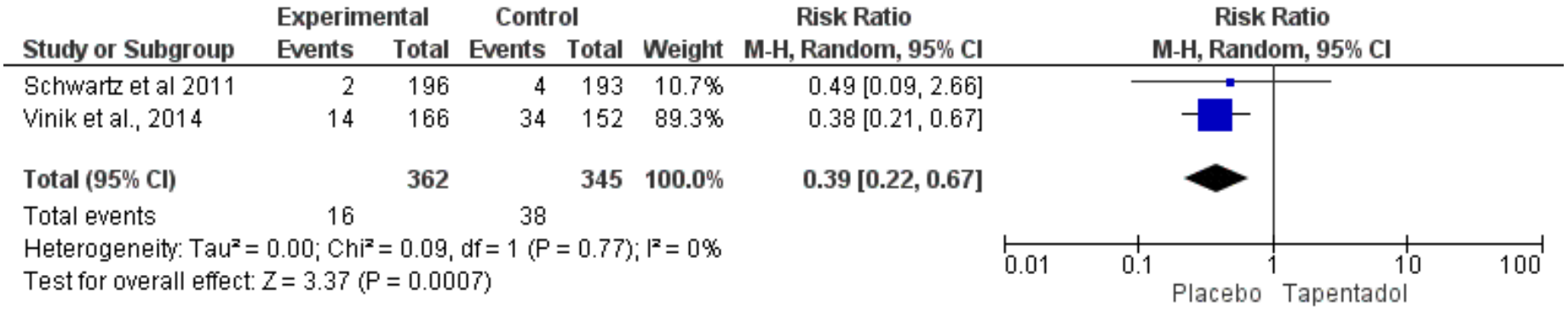


**Fig. 4. Adverse events nausea**
*Source: Schwartz et al. [15], Vinik et al. [14]*

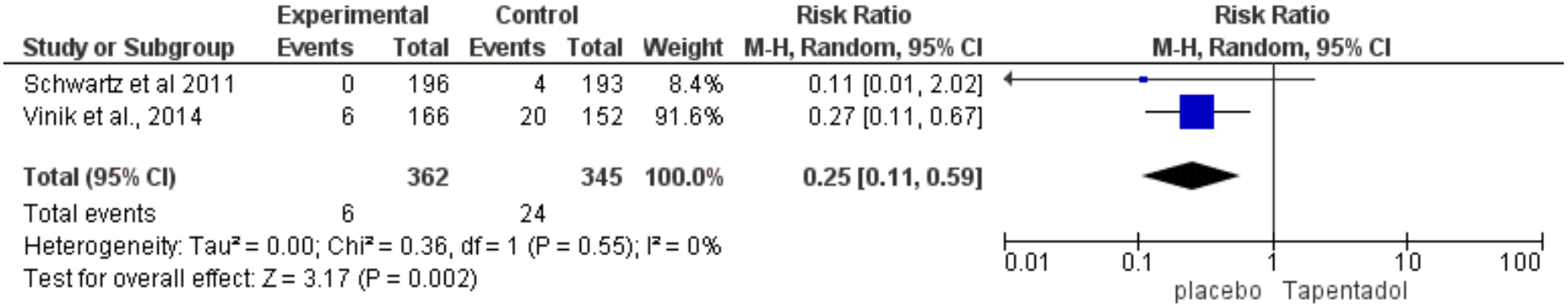


**Fig. 5. Adverse events vomiting**
*Source: Schwartz et al. [15], Vinik et al. [14]*

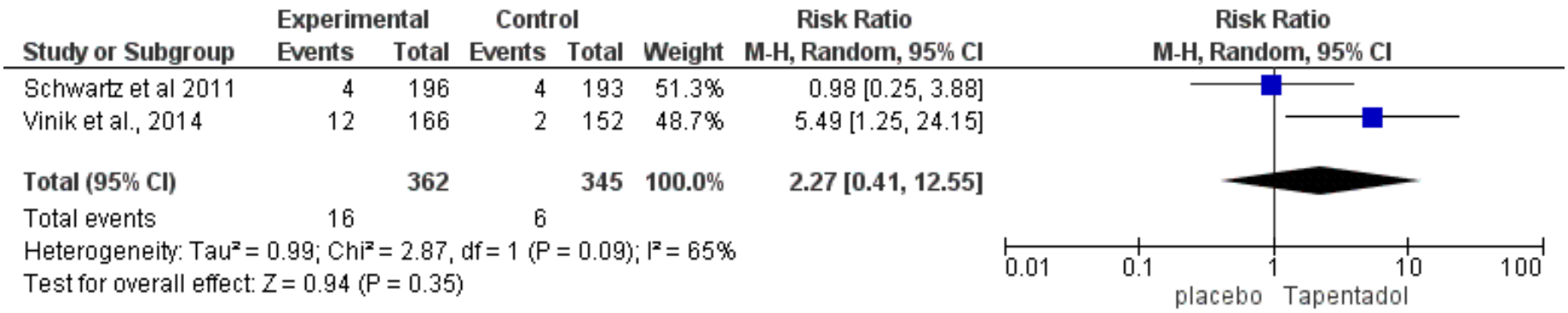


**Fig. 6. Adverse events dizziness**
*Source: Schwartz et al. [15], Vinik et al. [14]*

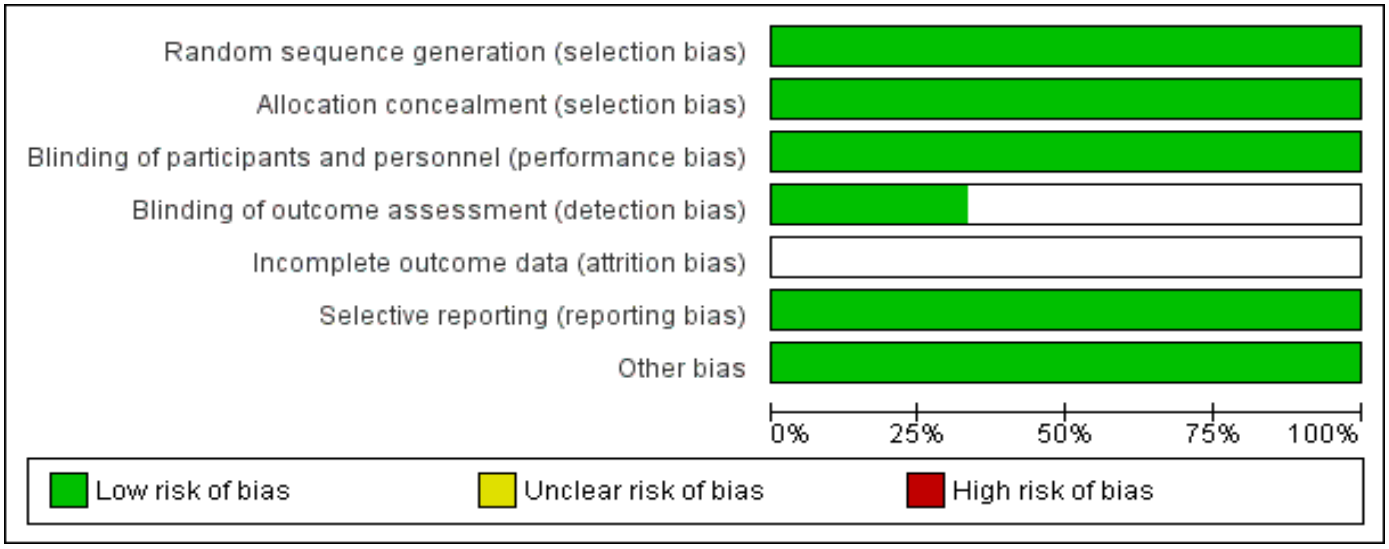


**Fig. 7. Risk of bias summary**

### 3.3 Adverse Events

**Nausea risk ratio (RR):** Two studies mentioned nausea as an adverse event that appeared during the treatment period [14,15]. The risk ratio of nausea between the tapentadol and placebo is 0.39 (95% CI [0.22, 0.67]) with the results in favour of tapentadol with a total sample of 362 patients in the Tapentadol group and 345 patients in the Placebo group. There was no heterogeneity in the results (I2=0% P=0.77) as shown in Fig. 3.

**Vomiting risk ratio (RR):** Two studies mentioned nausea as an adverse event that appeared during the treatment period [11,12]. The risk ratio of nausea between the tapentadol and placebo is 0.25 (95% CI [0.11, 0.59]) with the results in favor of tapentadol with a total sample of 362 patients in the Tapentadol group and 345 patients in the Placebo group. There was no heterogeneity in the results (I2=0% P=0.55) as shown in Fig. 4.

**Dizziness risk ratio (RR):** Two studies mentioned nausea as an adverse event that appeared during the treatment period [14,15]. The risk ratio of nausea between the tapentadol and placebo is 2.27 (95% CI [0.41, 12.55]) with no significant difference between both groups in this outcome with a total sample of 362 patients in the Tapentadol group and 345 patients in the Placebo group. There was a heterogeneity of the results (I2=65% P=0.09) as shown in Fig. 5.

**Quality assessment of the included studies:** The overall bias risk was determined to be minimal. The possibility of bias in this research was minimal since they were all randomized. Participant and staff blinding, as well as the blinding of outcome assessors, occurred in all trials. Incomplete information made certain details unclear. The risk was less in other areas. Extensive summaries of each study's risk of bias evaluation may be seen in Figs. 7 and 8.

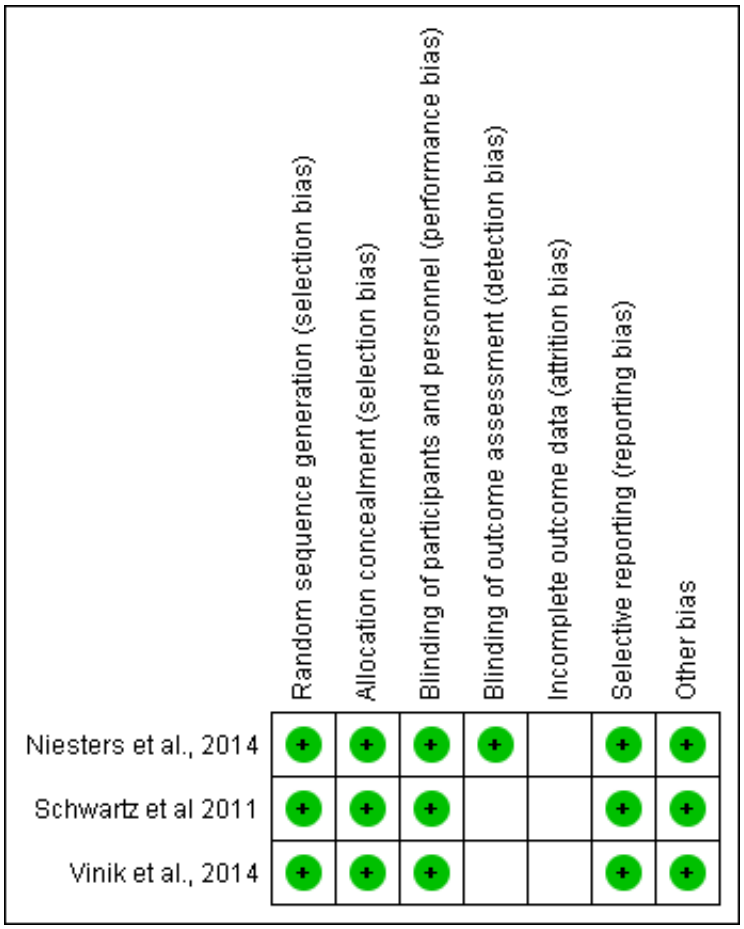


**Fig. 8. Risk of bias graph**
*Source: Niesters et al. [16], Schwartz et al. [15], Vinik et al. [14]*

## 4. DISCUSSION

Neuropathic pain is based on complex pathophysiology as it is discussed in the research that pharmacology intervention is helpful in overcoming neuropathic pain by using biochemical and transduction mechanisms. Different medications can act according to the different levels of neuropathic pain which is beneficial for the patients to reduce the pain [17]. Patients who are facing the problem of moderate to severe pain could not get effective results from the standard treatment as they are required to use stronger medication. In the above tables and figures, initial doses are recommended for the patients according to their level of pain severity and recommended medications according to the experiments. Tapentadol has multiple receptors that are helpful to reduce the risk of opioids. In the current research, the systematic review demonstrated a similar finding that Tapentadol is significant in the reduction of pain and is most likely to have fewer side effects as compared to other similar medications such as Placebo and buprenorphine [5].

The findings of various research represented that Tapentadol is a clinically approved medicine that could be used in different painful diseases such as chronic back pain PDN and cancer pain etc. Tapentadol is considered efficient due to its pharmacology and method of action because the research demonstrated that it is not only helpful in improving gastrointestinal problems but also helpful in managing PDN [5]. The affinity of Tapentadol for the μ-opioid receptor is less due to norepinephrine as it generates some side effects. The comparative analysis in the research of Vinik e al. [14] explained the side effects of morphine as compared to Tapentadol and the result revealed that Tapentadol caused less vomiting however the efficiency of Tapentadol was less than morphine, therefore, the data represented that Tapentadol is less contributing in the gastrointestinal side effects than the morphine [2].

In the results of studies, it is observed that Tapentadol is an effective drug to treat moderate to severe chronic pains related to osteoarthritis pain [18]. The use of Tapentadol may result in a lower occurrence of gastrointestinal side effects that occur commonly in such patients. Furthermore, the research conducted related to osteoarthritis patients represented higher efficiency in the treatment of moderate to severe pain than the other drugs such as placebo. According to results of another study represented that a placebo or any other related drugs may reduce back pain but it is observed that among other similar medicine, Tapentadol had greater efficiency [18]. However, other medicines represented less productivity as compared to Tapentadol.

The practical observation in clinics represented that there are few occurrences of adverse effects of Tapentadol as compared to oxycodone provided in equal doses. Recent research elaborated that with the use of Tapentadol, there are significant improvements in managing pain among patients who were suffering from severe chronic knee pain and this research is approved by World Health Organization. It is an interesting fact that the improvements among the patients are observed and that there are also improvements in managing anxiety and depression in the patients that lead to improved quality of life and health status. The structure of Tapentadol is harmonized with a μ-opioid receptor that is also beneficial to stop the norepinephrine and provides prominent benefits to improve memory. Indeed, it is represented that morphine is two times more rapidly affecting patients than Tapentadol. Moreover, the characteristics and structure of Tapentadol represent that it has a smaller adverse impact on patients [17].

Polypharmacy is a situation related to patients who commonly live on multiple types of medications specifically among these types of patients, sensitivity is riskier related to drug interaction. For this purpose, such patients are offered multiple treatments and methods by providing low doses so that the old age patients can get more relief from the pain without getting side effects from the other disease. The pharmacological medicine that is used for such patients to get dual action with a single medication is known as tramadol. Tapentadol is developed to reduce the hurdles in the efficiency of tramadol [19]. Mercadante et al. (2010) conducted research related to the use of Tapentadol ER for reducing cancer pain and it was observed that of the respondents, only 7% of patients stopped the use of Tapentadol due to its poor performance in the treatment. The findings represented that pentadol is effective for cancer patients, but it may result in memory loss. Moreover, the rate of respondents who restrict the use of Tapentadol was less than the therapeutic opioids that were less considered formally including transdermal buprenorphine 15%, oral morphine 13% and transdermal fentanyl 14%. The study was conducted on 236

patients who were facing the problem of chronic malignant tumors in which the respondents were provided with Tapentadol ER and Oxycodone CR to analyze the efficacy. The results demonstrated that Tapentadol provided analytical benefits that were superior to oxycodone. The results represented that Tapentadol is more effective than Oxycodone and Placebo as it provides superior benefits among the patients [20].

Schwartz et al. [15] conducted an evaluation of pain intensity among patients at the beginning of the study. The mean pain intensity at the starting point was 24 ± 12.4 in the placebo group, I represented that most patients in this group suffered from severe pain. On the other hand, in the Tapentadol ER group, the mean pain intensity at starting point was 22 ± 11.2, with a significant number that reported severe pain. However, it was observed that the Tapentadol ER group had higher pain intensity for moderate pain compared to the placebo group, with values of 65 ± 33.2 and 50 ± 25.9, respectively. During the titration period, a substantial number of patients (154 ± 78.6) reported experiencing severe pain at some point. At the start of the second chapter of the study, the pain intensity was measured at 3.5 ± 1.89. From the start of the maintained Tapentadol ER dose until week 12, the mean change in average pain intensity was 1.4 in the placebo group and 0.0 in the Tapentadol ER group, indicating that Tapentadol ER effectively managed pain in these patients [15]. The findings of another study represent the advantages obtained from Tapentadol ER among the group of patients who were suffering from chronic back pain that has a neuropathic element. The study was conducted among patients who were provided with 300mg per day Tapentadol ER to reduce back pain and the results represented that significant improvements were experienced among the patients and results led to improved quality of life of patients [21].

In similar research, the efficiency and tolerability of Tapentadol in the patient were experienced and observed that the improvement in neuropathic pain and improvement in quality of life are two different variables that lead to improvement in tolerability. Concern related to the use of Tapentadol depends on safety issues as it may influence the respiratory system which may result in depression and affect the brain. Therefore, it is not necessary to conduct the research only to find the suitability of drugs for specific diseases, but it is also necessary to analyze the issues related to the drugs and for this purpose, the research analyzed the tolerability of Tapentadol. In the randomized label study patients facing the problem of chronic knee or hip pain were provided with Tapentadol ER based on 100 to 250 mg with oxycodone 20 to 50 mg over a year. The analysis represented that the patients faced problems of nausea, vomiting, and dizziness that required discontinuation of oxycodone more as compared to Tapentadolv [22]. During the titration phase of the Schwartz research, 70.9% of participants had TEAEs; more frequently reported side effects included nausea, dizziness, somnolence, constipation, vomiting, headache, tiredness, and itching. The incidence of TEAEs during the blinding phase was similar to that seen during the titration phase (51.8%). Patients reported less disorientation and anxiety after using Tapentadol, and the addition of pregabalin to Tapentadol ER improved the management of persistent back pain caused by nerve damage [22].

On the other side, it is observed that Tapentadol ER has more favourable side effects than traditional medications as they mostly result in nausea and other gastrointestinal symptoms among the patients. Besides this, several experiments were conducted to analyze the application of Tapentadol for managing PDN. Recent study analysis provided information about Tapentadol it is helpful to manage chronic pain among patients with diabetic polyneuropathy. With the help of experimental paradigms, it is evaluated that a large amount of analgesia represented a slight decrease in heat stimulation (Roulet, Rollason, Desmeules, & Piguet., 2021). For this purpose, 24 patients facing the problem of diabetic polyneuropathy were provided treatment with Tapentadol and Placebo for a month. The conclusion of a study represented that Tapentadol ER showed significant improvement in pain reduction as no side effect was observed in the adjustment of analgesia. Moreover, the relief in diabetic neuropathic pain is mostly treated with Tapentadol than the other traditional medications observed in the research therefore the specific side effects among the patients due to Tapentadol in diabetic neuropathic pain could be treated to reduce chronic pain [23].

## 5. CONCLUSION

According to the findings of the study, Tapentadol is an effective therapy for controlling PDN and providing patients with a broad variety of medications. The study's findings indicated

that Tapentadol's efficacy and patient acceptability were on the rise, making it a viable alternative to conventional treatments. Interestingly, the results showed that Tapentadol helped patients relieve chronic pain at a lower cost and with greater tolerance than conventional opioid therapy. Tapentadol's efficacy might be studied further by comparing it to other medications used to treat the same or comparable conditions.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

## CONSENT AND ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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