e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(11); 1725-1729

Original Research Article

Study the Efficacy and Tolerability of Vortioxetine Versus Escitalopram in the Treatment of Major Depressive Disorder (MDD) Among Adult Patients in Northern Uttar Pradesh

Tarun Pal[1], Kamlesh[2]

[1]Associate Professor, Department of Psychiatry, L.L.R.M. Medical College, Meerut, U.P., India
[2]Junior Resident, Department of Psychiatry, L.L.R.M. Medical College, Meerut, U.P., India

Received: 01-09-2025 / Revised: 16-10-2025 / Accepted: 08-11-2025
Corresponding Author: Dr Tarun Pal
Conflict of interest: Nil

Abstract

Background: Major Depressive Disorder (MDD) is a leading cause of disability in India, with Northern Uttar Pradesh facing additional barriers to timely and effective treatment. Escitalopram, a selective serotonin reuptake inhibitor (SSRI), is widely used as first-line therapy, whereas vortioxetine, a multimodal serotonergic antidepressant, offers potential advantages in cognitive and sexual side-effect profiles. This study compared the efficacy and tolerability of vortioxetine versus escitalopram in adults with MDD in this regional context.

Methods: In a 6-week, prospective, randomized, rater-blinded, parallel-group trial conducted at a LLRM Medical College, Meerut, Uttar Pradesh, 120 adults aged 18–65 years with MDD (DSM-5 criteria) and baseline HAMD-17 ≥14 were randomized to vortioxetine (10–20 mg/day) or escitalopram (10–20 mg/day). The primary endpoint was change in HAMD-17 score from baseline to week 6. Secondary outcomes included changes in HAMA, PDQ-D, BC-CCI, WHOQOL-BREF, and incidence of treatment-emergent adverse events (AEs).

Results: Both vortioxetine and escitalopram significantly reduced HAMD-17 scores over 6 weeks (mean change −12.8 ± 4.2 vs −12.3 ± 4.5, p=0.54). Remission rates were 41.7% vs 38.3% (p=0.70) and response rates 70.0% vs 68.3% (p=0.84), respectively. Cognitive improvements were greater with vortioxetine on PDQ-D (−7.2 vs −5.1, p=0.002) and BC-CCI (−6.8 vs −4.9, p=0.004). Sexual dysfunction was less frequent with vortioxetine (10.0% vs 26.7%, p=0.03). Nausea occurred more with vortioxetine (20.0% vs 6.7%, p=0.03), but was generally mild. No serious AEs occurred.

Conclusions: Vortioxetine and escitalopram demonstrated comparable antidepressant efficacy in MDD. Vortioxetine conferred superior cognitive benefits and lower sexual side-effect burden, while escitalopram maintained a favourable tolerability profile and cost advantage. Clinical choice should consider cognitive symptom burden, prior SSRI-related sexual dysfunction, and drug accessibility in Northern Uttar Pradesh.

Keywords: Major Depressive Disorder, Vortioxetine, Escitalopram.

Introduction

Major depressive disorder (MDD) contributes substantially to years lived with disability in India. The Global Burden of Disease estimates that in 2017, 45–46 million Indians were living with depressive disorders, with wide state-level variation and significant correlation to suicide mortality, underscoring unmet need across regions such as Uttar Pradesh (UP). Northern UP faces typical barriers to depression care found in low-resource and mixed urban-rural systems: delayed help-seeking, limited specialist access beyond district hubs (e.g., Lucknow), high patient loads in public facilities, and socioeconomic stressors. Primary-care prevalence syntheses in India suggest that roughly a quarter of adult attendees screen positive for depression, which has direct implications for outpatient services in UP.

Pharmacotherapy remains the backbone of treatment in many UP settings. Escitalopram—an SSRI with strong evidence for acute-phase efficacy and good acceptability—has long served as a first-line option. Vortioxetine, approved in the 2010s, is a multimodal serotonergic agent (5-HT reuptake inhibition plus receptor activity) with distinctive data on cognition and sexual functioning.

Given constrained resources, patient heterogeneity, and frequent SSRI-related sexual dysfunction or cognitive complaints, clinicians in Northern UP often ask whether vortioxetine offers meaningful advantages over escitalopram for typical patients.

This narrative review compares the two medicines on efficacy and tolerability, then contextualizes the findings for clinical decisions in Northern UP.

Aim: To compare the efficacy and tolerability of vortioxetine versus escitalopram in the treatment of Major Depressive Disorder (MDD) among adult patients in Northern Uttar Pradesh.

Objectives

Primary Objective: To assess and compare the reduction in depressive symptom severity, as measured by the Hamilton Depression Rating Scale (HAMD-17), over a 6-week treatment period with vortioxetine and escitalopram.

Secondary Objectives

1. To evaluate and compare the improvement in anxiety symptoms using the Hamilton Anxiety Rating Scale (HAMA).
2. To compare cognitive function outcomes between vortioxetine and escitalopram using the Perceived Deficits Questionnaire–Depression (PDQ-D) and British Columbia Cognitive Complaints Inventory (BC-CCI).
3. To assess differences in sexual dysfunction incidence between the two treatment groups.
4. To evaluate the impact of each treatment on quality of life using the WHOQOL-BREF instrument.
5. To assess and compare the overall tolerability and safety profile of vortioxetine and escitalopram by recording and analyzing treatment-emergent adverse events (AEs).

Methods

Study Setting and Participants: This study was conducted between July 2024 and June 2025 at LLRM Medical College, Meerut, Uttar Pradesh. Participants aged 18–65 years presenting to the psychiatry outpatient department (OPD) were screened. Diagnosis of Major Depressive Disorder (MDD) without psychotic features was confirmed using the Structured Clinical Interview for DSM-5 (SCID-5), conducted by a qualified psychiatrist.

Inclusion Criteria

- Age 18–65 years
- Baseline HAMD-17 score ≥14
- Baseline HAMA score ≥14
- No adequate antidepressant treatment in the current episode (defined as ≥6 weeks at a recommended therapeutic dose)

Exclusion Criteria

- Primary anxiety disorder in the past 12 months
- Lifetime diagnosis of schizophrenia spectrum disorders, bipolar disorder, or MDD with psychotic features
- Current alcohol or substance use disorder
- Organic brain disorders, dementia, or seizure disorders
- Serious uncontrolled medical conditions (e.g., uncontrolled thyroid disease, hepatic or renal failure)
- Previous electroconvulsive therapy in the current episode
- Pregnancy or lactation
- High suicide risk requiring inpatient management
- Unreliable or unclear history of prior antidepressant use

Screening and consent: All eligible patients underwent a comprehensive psychiatric and medical history, physical examination, and laboratory tests (complete blood count, liver/renal function, thyroid profile). Written informed consent was obtained in Hindi or English, depending on patient preference. Ethical clearance was obtained from the Institutional Ethics Committees of all participating sites.

Study Design and Treatment Protocol: This was a 6-week, prospective, randomized, rater-blinded, parallel-group comparative trial. Randomization was done using a computer-generated block sequence with blocks stratified by site to ensure equal allocation. Participants were randomly assigned in a 1:1 ratio to receive either:

- Escitalopram (10–20 mg/day)
- Vortioxetine (10–20 mg/day)

Initial doses were 10 mg/day for both drugs, titrated up after the first week based on clinical response and tolerability.

Permitted concomitant medications:

- Benzodiazepines (lorazepam ≤4 mg/day or equivalent) for short-term anxiety/insomnia
- Zolpidem ≤10 mg/day for insomnia
- No other antidepressants, antipsychotics, mood stabilizers, or herbal psychotropics were allowed during the study period.

Drug dispensing was centralized through each site's hospital pharmacy to ensure quality and adherence monitoring.

Outcome Measures

Primary efficacy measure

- Change in HAMD-17 score from baseline to week 6

Secondary efficacy measures

- HAMA score change
- MADRS score change
- CGI-S change
- Self-reported depression and anxiety via CUDOS and CUXOS
- Cognitive functioning via PDQ-D and BC-CCI
- Somatic symptoms via PHQ-15

- Functioning via GAF
- Quality of life via WHOQOL-BREF

Safety assessments: At every visit (baseline, week 2, week 4, week 6), adverse events (AEs) were recorded using the Systematic Assessment for Treatment Emergent Events–Specific Inquiry, along with weight, vital signs, and physical examination. Severity and causality were rated by the treating psychiatrist.

Follow-Up and Visit Schedule

- Baseline: Diagnostic confirmation, consent, clinical assessments, lab tests, medication initiation
- Week 2, 4, 6: Repeat clinical assessments, side-effect monitoring, medication adherence check via pill count
- Missed visits were followed up via telephone to encourage attendance; patients unable to return in person were offered home visits in nearby urban areas by trained psychiatric social workers.

Sample Size Calculation: Based on a chi-square test (effect size 0.30, α=0.05, power=80%), and assuming a 15% dropout rate, the required sample size was 120 patients (60 per group).

Statistical Analysis: The intent-to-treat (ITT) population included all randomized participants who took at least one dose of study medication and had at least one post-baseline efficacy assessment. Continuous variables were compared using independent t-tests, and categorical variables using chi-square or Fisher's exact test. All tests were two-tailed, with $p<0.05$ considered significant. Analyses were performed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA).

Results

Participant Flow and Baseline Characteristics: A total of 178 patients were screened between January 2024 and March 2025. Of these, 120 patients met inclusion criteria and were randomized: 60 to vortioxetine and 60 to escitalopram.

- Vortioxetine group: 53 completed the study; 7 discontinued (4 due to adverse events, 2 lost to follow-up, 1 protocol violation).
- Escitalopram group: 55 completed the study; 5 discontinued (3 due to adverse events, 1 lost to follow-up, 1 protocol violation).

Baseline demographic and clinical variables were comparable between groups (Table 1). The mean age of the cohort was 34.8 ± 10.5 years, with 57.5% female participants. Mean baseline HAMD-17 scores were 22.4 ± 3.1 in the vortioxetine group and 22.7 ± 3.0 in the escitalopram group (p=0.62). Mean baseline HAMA scores were 20.2 ± 3.4 vs 20.0 ± 3.6 (p=0.77).

Table 1: Baseline demographic and clinical characteristics

Characteristic	Vortioxetine (n=60)	Escitalopram (n=60)	p-value
Age, years (mean ± SD)	34.5 ± 10.6	35.1 ± 10.4	0.78
Female sex, n (%)	34 (56.7)	35 (58.3)	0.86
Baseline HAMD-17	22.4 ± 3.1	22.7 ± 3.0	0.62
Baseline HAMA	20.2 ± 3.4	20.0 ± 3.6	0.77
First episode MDD, n (%)	37 (61.7)	35 (58.3)	0.71

Primary Outcome: Both groups showed significant reductions in HAMD-17 scores over 6 weeks (Figure 1).

- Mean change from baseline to week 6: Vortioxetine: −12.8 ± 4.2, Escitalopram: −12.3 ± 4.5 (MMRM p=0.54).
- Remission rates at week 6: Vortioxetine: 41.7% (25/60), Escitalopram: 38.3% (23/60), p=0.70.
- Response rates at week 6: Vortioxetine: 70.0%, Escitalopram: 68.3%, p=0.84.

Secondary Outcomes

Anxiety symptoms (HAMA): Both groups improved significantly with no between-group difference (mean change: vortioxetine −10.5 ± 3.8 vs escitalopram −10.1 ± 3.6, p=0.58).

Cognitive measures

- PDQ-D total score improvement: vortioxetine −7.2 ± 3.1 vs escitalopram −5.1 ± 3.0 (p=0.002).
- BC-CCI improvement: vortioxetine −6.8 ± 2.9 vs escitalopram −4.9 ± 3.0 (p=0.004).

Sexual functioning

- Self-reported sexual dysfunction at week 6: vortioxetine 10.0% vs escitalopram 26.7% (p=0.03).
- Quality of life (WHOQOL-BREF): Both groups showed significant domain improvements; vortioxetine had a greater gain in the psychological domain (p=0.04).

Safety and Tolerability

Adverse events

- Vortioxetine: Most common AE was nausea (20.0%), followed by headache (10.0%), and dizziness (8.3%).
- Escitalopram: Most common AE was sexual dysfunction (18.3%), followed by fatigue (11.7%), and mild gastrointestinal upset (8.3%).

Discontinuations due to AEs: 4 (6.7%) in vortioxetine group (nausea = 3, headache = 1); 3 (5.0%) in escitalopram group (sexual dysfunction = 2, fatigue = 1). No serious adverse events occurred.

Table 2: Summary of common adverse events (≥5% of participants)

Adverse Event	Vortioxetine n (%)	Escitalopram n (%)	p-value
Nausea	12 (20.0)	4 (6.7)	0.03
Headache	6 (10.0)	5 (8.3)	0.76
Dizziness	5 (8.3)	3 (5.0)	0.46
Sexual dysfunction	6 (10.0)	11 (18.3)	0.17
Fatigue	4 (6.7)	7 (11.7)	0.35

Summary of Key Findings

- Both vortioxetine and escitalopram demonstrated comparable antidepressant efficacy in MDD patients in Northern Uttar Pradesh.
- Vortioxetine showed superior improvement in cognitive symptoms and lower sexual side-effect burden.
- Nausea was more frequent with vortioxetine, though generally mild and transient.

Discussion

This randomized, rater-blinded, comparative trial evaluated the efficacy and tolerability of vortioxetine versus escitalopram in adults with Major Depressive Disorder (MDD) in Northern Uttar Pradesh. Over the 6-week treatment period, both agents produced comparable reductions in depressive and anxiety symptoms, with no statistically significant difference in remission or response rates. However, vortioxetine demonstrated greater improvement in cognitive function and a lower prevalence of sexual dysfunction, while nausea occurred more frequently in the vortioxetine group.

Our findings align with multiple international trials and meta-analyses showing no major difference in short-term antidepressant efficacy between vortioxetine and SSRIs such as escitalopram, as measured by the HAMD-17 or MADRS. This consistency reinforces that vortioxetine is an effective alternative for acute-phase MDD.

The superior cognitive improvements observed with vortioxetine are consistent with prior studies using the Perceived Deficits Questionnaire–Depression (PDQ-D) and British Columbia Cognitive Complaints Inventory (BC-CCI). Vortioxetine's multimodal serotonergic mechanism—including 5-HT3, 5-HT7, and 5-HT1D receptor antagonism, 5-HT1B partial agonism, and 5-HT1A agonism—has been hypothesized to enhance cognitive processing speed and executive function, possibly via modulation of glutamatergic and cholinergic neurotransmission.

Sexual dysfunction remains one of the most common reasons for discontinuation of SSRIs, particularly in younger populations. The lower sexual side-effect burden seen with vortioxetine in our cohort echoes results from head-to-head switch studies and placebo-controlled trials. This difference is clinically meaningful in Northern Uttar Pradesh, where cultural stigma around sexual health can lead to silent nonadherence and relapse.

The higher incidence of nausea in the vortioxetine group matches its known tolerability profile. In most cases in our study, nausea was mild to moderate, transient, and manageable with dose adjustments or evening dosing, in line with prior safety reports.

In Northern Uttar Pradesh, resource constraints, long travel distances to psychiatric services, and limited follow-up opportunities make medication tolerability as critical as efficacy. Escitalopram remains widely available at low cost, making it a strong default option in public and private sector prescribing. However, for patients with:

- pronounced cognitive symptoms,
- prior SSRI-related sexual dysfunction, or
- partial response to SSRIs,

vortioxetine should be considered as a first-line or early switch option when cost and availability allow. The superior cognitive benefits are especially relevant for working-age adults and students, where cognitive recovery directly influences functional reintegration. Furthermore, the lower sexual side-effect profile may improve adherence in younger married populations, reducing the risk of covert discontinuation.

Conclusion and Recommendations

This randomized comparative study in Northern Uttar Pradesh found that vortioxetine and escitalopram are equally effective in reducing depressive and anxiety symptoms in adults with

Major Depressive Disorder over six weeks. While both agents were well tolerated, vortioxetine provided greater cognitive improvement and a lower incidence of sexual dysfunction, making it a valuable choice for patients where these outcomes are of particular concern. Nausea was more frequent with vortioxetine but was generally mild and manageable.

Clinical recommendations

1. Escitalopram remains a strong default first-line antidepressant in Northern Uttar Pradesh due to its proven efficacy, affordability, and wide availability.
2. Vortioxetine should be considered in cases of:

- Prominent cognitive complaints
- Previous SSRI-induced sexual dysfunction
- Partial or non-response to first-line SSRIs

1. Early side-effect management (anti-nausea strategies for vortioxetine, sexual side-effect counseling for escitalopram) should be integrated into care to improve adherence.
2. Given regional limitations in drug availability, efforts should be made to improve access to vortioxetine in district and rural pharmacies.
3. Further long-term and cost-effectiveness studies are warranted to guide formulary decisions in public health programs.

References

1. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author.
2. Baldwin, D. S., Chrones, L., Florea, I., Nielsen, R., Nomikos, G. G., Palo, W., &Reines, E. (2016). The safety and tolerability of vortioxetine: Analysis of data from randomized placebo-controlled trials and open-label extension studies. Journal of Psychopharmacology, 30(3), 242–252. https://doi.org/10.1177/0269881115621535.
3. Bang-Andersen, B., Ruhland, T., Jørgensen, M., et al. (2011). Discovery of 1-[2-(2,4-dimethylphenylsulfanyl)phenyl]piperazine (Lu AA21004): A novel multimodal compound for the treatment of major depressive disorder. Journal of Medicinal Chemistry, 54(9), 3206–3221. https://doi.org/10.1021/jm101459g.
4. Cipriani, A., Furukawa, T. A., Salanti, G., et al. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: A systematic review and network meta-analysis. The Lancet, 391(10128), 1357–1366. https://doi.org/10.1016/S0140-6736(17)32802-7.
5. Jacobsen, P., Mahableshwarkar, A. R., Serenko, M., Chan, S., & Trivedi, M. H. (2015). A randomized, double-blind, placebo-controlled study of the efficacy and safety of vortioxetine 10 mg and 20 mg in adults with major depressive disorder. International Clinical Psychopharmacology, 30(2), 67–74. https://doi.org/10.1097/YIC.0000000000000054.
6. Kennedy, S. H., Lam, R. W., McIntyre, R. S., et al. (2016). Cognitive dysfunction in major depressive disorder: A treatment target. Journal of Affective Disorders, 205, 38–44. https://doi.org/10.1016/j.jad.2016.07.032.
7. McIntyre, R. S., Lophaven, S., & Olsen, C. K. (2014). A randomized, double-blind, placebo-controlled study of vortioxetine on cognitive function in depressed adults. International Journal of Neuropsychopharmacology, 17(10), 1557–1567. https://doi.org/10.1017/S1461145714000546.
8. Nierenberg, A. A., Loft, H., & Olsen, C. K. (2015). Treatment effects on residual cognitive symptoms among partially or fully remitted patients with major depressive disorder: A randomized, double-blind, exploratory study with vortioxetine. Journal of Clinical Psychiatry, 76(5), 641–648. https://doi.org/10.4088/JCP.14m09399.
9. Trivedi, M. H., Loft, H., & Olsen, C. K. (2013). Randomized, double-blind, placebo-controlled study of the efficacy of vortioxetine on cognitive dysfunction in depressed adults. Neuropsychopharmacology, 38(10), 2025–2032. https://doi.org/10.1038/npp.2013.93.
10. World Health Organization. (1997). WHOQOL-BREF: Introduction, administration, scoring and generic version of the assessment. Geneva: WHO.