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RESEARCH ARTICLE
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COMPARATIVE EVALUATION OF THE EFFICACY AND SAFETY OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIS) AND SEROTONIN–NOREPINEPHRINE REUPTAKE INHIBITORS (SNRIS) IN THE TREATMENT OF MAJOR DEPRESSIVE DISORDER: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract

Background: SSRIs and SNRIs are among the most widely prescribed antidepressants. Comparative data on their relative efficacy and tolerability in real-world Indian settings remain limited.

Objective: To compare the efficacy, safety, and tolerability of SSRIs and SNRIs in patients with Major Depressive Disorder (MDD).

Methods: A prospective observational study was conducted over 6 months in the Psychiatry and Pharmacology Departments of a tertiary care hospital. A total of 120 patients diagnosed with MDD (DSM-5 criteria) were enrolled—60 received SSRIs (fluoxetine, escitalopram, sertraline) and 60 received SNRIs (venlafaxine, duloxetine). Efficacy was assessed using the Hamilton Depression Rating Scale (HAM-D) at baseline, 4 weeks, and 8 weeks. Adverse effects were documented using a standardized checklist. Statistical analysis was performed using paired t-test and chi-square test.

Results: Baseline HAM-D scores were comparable (SSRI: 23.4 ± 4.2; SNRI: 23.8 ± 3.9; $p = 0.62$). At 8 weeks, both groups showed significant improvement (SSRI: 11.6 ± 3.4; SNRI: 9.9 ± 3.2; $p = 0.02$).Response rates (≥ 50% reduction in HAM-D) were 71.6% for SSRIs and 80% for SNRIs. Common adverse effects: SSRIs—nausea (25%), headache (18%), sexual dysfunction (20%); SNRIs—dry mouth (23%), insomnia (20%), dizziness (15%).Dropout rates: SSRI 8.3%, SNRI 10%.

Conclusion: Both SSRIs and SNRIs are effective for MDD. SNRIs demonstrated marginally superior efficacy, while SSRIs were better tolerated. Choice of therapy should be individualized.

Keywords: SSRIs, SNRIs, major depressive disorder, antidepressants, efficacy, tolerability

Introduction

Major depressive disorder (MDD) is a prevalent and disabling psychiatric illness, affecting approximately 5% of adults globally (1). The introduction of selective serotonin reuptake inhibitors (SSRIs) and serotonin–norepinephrine reuptake inhibitors (SNRIs) have revolutionized depression management, offering improved safety compared with tricyclic antidepressants (2,3).

SSRIs (fluoxetine, escitalopram, sertraline) primarily inhibit serotonin reuptake, while SNRIs (venlafaxine, duloxetine) inhibit both serotonin and norepinephrine reuptake, potentially conferring broader efficacy in severe depression (4,5). However, comparative real-world data from Indian settings are scarce (6). This study aims to evaluate and compare the efficacy and safety of SSRIs and SNRIs in Indian patients with MDD under naturalistic clinical conditions.

Materials and Methods

Study Design and Setting:

A prospective observational study was conducted from January to June 2024 in the Psychiatry and Pharmacology Departments of a tertiary care teaching hospital.

Study Population:

A total of 120 adult patients (aged 18–60 years) diagnosed with MDD according to DSM-5 criteria and newly initiated on SSRIs or SNRIs were included.

Inclusion Criteria:

- HAM-D score ≥17 (moderate to severe depression)
- Drug-naïve or drug-free for ≥4 weeks

Exclusion Criteria:

- Bipolar disorder or psychotic depression
- Substance abuse
- Pregnancy or lactation
- Severe systemic comorbidity

Study Groups:

Group	**Drugs Used**	**No. of Patients**
SSRI	Fluoxetine (n=20), Escitalopram (n=25), Sertraline (n=15)	60
SNRI	Venlafaxine (n=30), Duloxetine (n=30)	60

Assessment Tools:

- **Efficacy:** Hamilton Depression Rating Scale (HAM-D) at baseline, 4 weeks, and 8 weeks (7)
- **Safety:** Patient-reported adverse effect checklist

Statistical Analysis:

Data were analysed using SPSS version 25. Paired t-test assessed within-group changes; unpaired t-test and chi-square test compared between groups. $p < 0.05$ was considered statistically significant.

Results

Table 1: Demographic Characteristics

Parameter	SSRI Group (n=60)	SNRI Group (n=60)	p-value
Age (years, mean ± SD)	34	35.3	0.61

Female (%)	58.3	56.6	0.83
Duration of illness (months)	7.2	7.5	0.71

Table 2: Change in HAM-D Scores

Time Point	SSRI (Mean ± SD)	SNRI (Mean ± SD)	p-value
Baseline	23.4 ± 4.2	23.8 ± 3.9	0.62
4 weeks	15.2 ± 3.9	13.6 ± 3.8	0.04*
8 weeks	11.6 ± 3.4	9.9 ± 3.2	0.02*

*$p < 0.05$ = significant difference

Table 3: Adverse Effects

Adverse Effect	SSRI Group (%)	SNRI Group (%)
Nausea	25	12
Headache	18	10
Sexual dysfunction	20	8
Dry mouth	8	23
Insomnia	10	20
Dizziness	5	15

Figure 1: Demographic Characteristics.

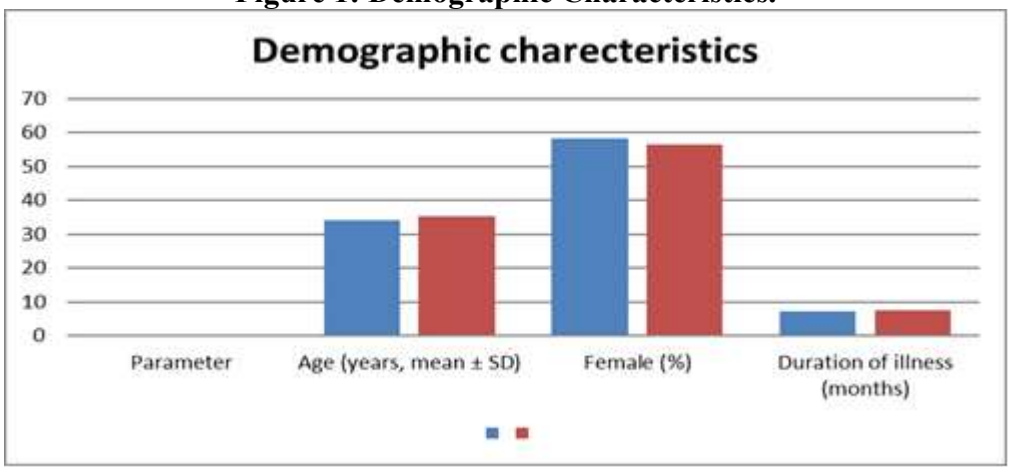


Figure 2: change in HAM-D score

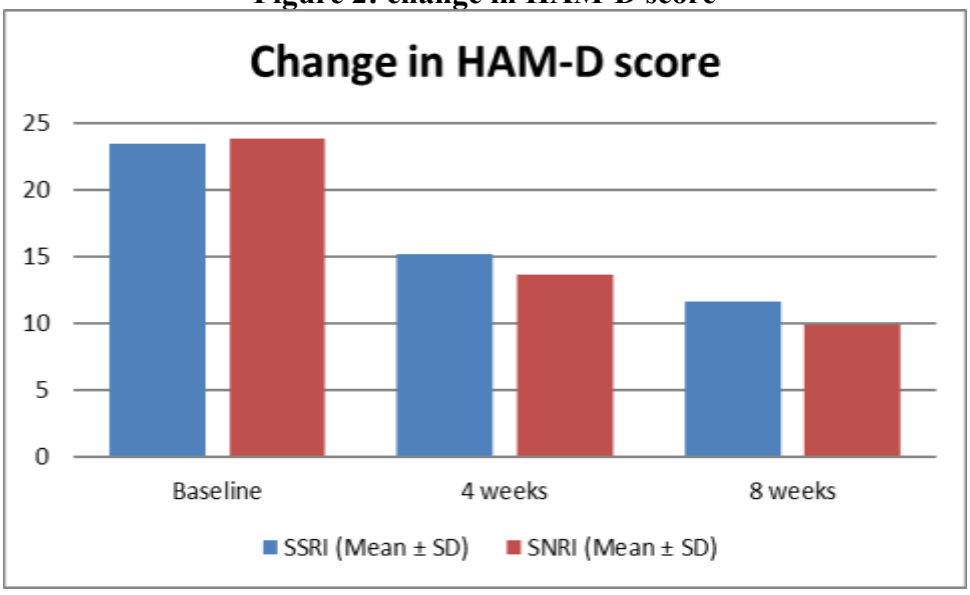
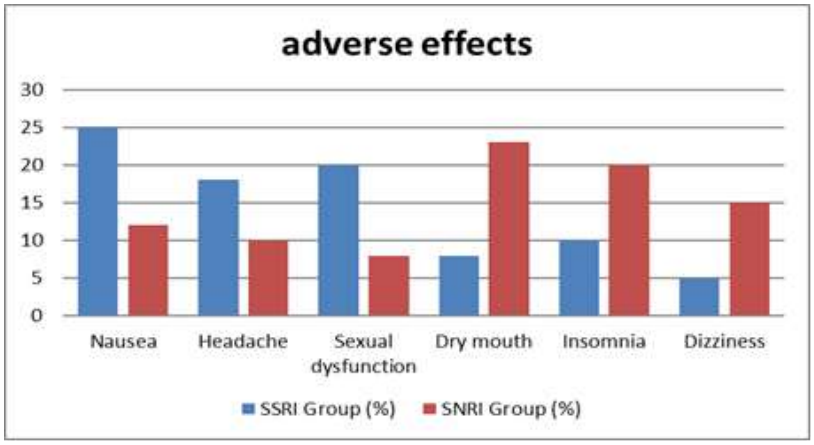


Figure 3: Adverse Effects



Discussion

Both SSRIs and SNRIs significantly reduced HAM-D scores over 8 weeks, in line with findings from previous large meta-analyses (8). SNRIs demonstrated marginally greater improvement, likely due to their dual mechanism involving norepinephrine reuptake inhibition, which may enhance motivation and energy (5,9). SSRIs were associated with gastrointestinal and sexual adverse effects, while SNRIs caused more insomnia and dry mouth—similar to patterns described in earlier studies (2,4). Low dropout rates suggest both drug classes were generally well-tolerated.

The results emphasize individualized antidepressant selection—SSRIs may be preferred for patients prioritizing tolerability, while SNRIs can be considered for those requiring greater symptomatic improvement or experiencing fatigue and apathy (3,6,10).

Conclusion

Both SSRIs and SNRIs are effective in the management of major depressive disorder. SNRIs demonstrated slightly greater efficacy, whereas SSRIs were better tolerated. Individualized antidepressant selection based on patient profile and comorbidities can optimize outcomes.

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