

The Economic Burden of Mental Health: Cost Variation of Antidepressants in the Indian Market

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Abstract—Background: Depressive disorders require prolonged pharmacotherapy, and the economic burden of treatment may affect affordability and adherence. In India, multiple branded generic formulations of antidepressants are available, leading to potential variations in medicine prices.

Objectives:

To evaluate and compare the cost variation among commonly prescribed oral antidepressants available in the Indian pharmaceutical market and to identify the extent of inter-brand price differences among equivalent formulations.

Methods:

A descriptive cross-sectional pharmaco-economic study was conducted using pricing data from the Current Index of Medical Specialties (CIMS) January–April 2025 edition and Indian Drug Review (IDR) 2025 Issue 1. Cost variation and cost ratio were calculated for eligible oral antidepressant formulations with identical strength and dosage forms across different brands.

Results:

The study analysed 20 antidepressant monotherapies and 8 fixed-dose combinations across five pharmacological classes. Marked inter-brand price variation was observed.

The highest variation among monotherapies was observed with Imipramine 25 mg (434.71%; cost ratio 5.35), followed by Dosulepin 75 mg (371.57%) and Duloxetine 30 mg (352.34%). The lowest variation was seen with Paroxetine 30 mg (7.38%). Escitalopram 10 mg had the highest brand availability with 31 manufacturers. A low positive correlation was observed between number of manufacturers and price variation ($r=0.378$).

Conclusion:

Substantial cost variation exists among antidepressant brands in India, which may influence affordability and treatment continuity. Rational prescribing with consideration of cost-effectiveness and improved price transparency may help reduce avoidable healthcare expenditure.

Index Terms—Antidepressants; Cost variation; Pharmacoeconomics; Drug pricing; Depression

I. INTRODUCTION

Mental health disorders constitute a major public health challenge, contributing substantially to morbidity, disability, and socioeconomic burden in India and globally. [1,2] In low- and middle-income countries, the economic burden of mental illness is compounded by productivity loss, impaired occupational functioning, and the need for sustained therapeutic care. [2,3] Depressive disorders are particularly important in this context because of their recurrent course, long-term treatment requirements, and potential for relapse when therapy is interrupted. [4,17] In India, mental health disorders represent a considerable and heterogeneous public health burden across states, demographic groups, and care settings. [1,5–7] This burden is further shaped by social vulnerability and gender-related determinants, with women experiencing distinct mental health challenges that may affect household stability and economic productivity. [8]

The economic impact of psychiatric illness in India is intensified by substantial reliance on private out-of-pocket health expenditure. [9,10] For chronic mental

health conditions, recurring costs related to consultations, investigations, travel, and long-term medication may impose significant financial strain on patients and families. [9-12] Although community-based rehabilitation, task-sharing approaches, and psychological interventions delivered by non-specialist health workers have shown potential to improve access and reduce costs, their availability remains uneven across routine care settings. [11,13,14]

In this context, pharmacotherapy remains a central component of depression management in India, particularly where structured psychotherapeutic services are limited or difficult to access. [13-15] However, even when individual medicine prices appear modest, the cumulative cost of long-term antidepressant therapy may contribute meaningfully to direct medical expenditure. [15] The Indian pharmaceutical market is characterized by multiple branded generic formulations of the same molecule, strength, and dosage form, resulting in substantial inter-brand price variation. Previous Indian evidence on antidepressants, including escitalopram, fluoxetine, and amitriptyline, has demonstrated clinically relevant cost differences between comparable formulations. [16]

Such price variation has important implications for affordability and continuity of care. Prescribing higher-priced brands when therapeutically comparable lower-cost alternatives are available may increase out-of-pocket expenditure and adversely influence adherence. [16] Premature discontinuation of antidepressant therapy may increase the risk of relapse, thereby adding to clinical burden and subsequent health-care utilization. [17] Pharmacoeconomic evaluation and cost-minimization approaches are therefore important to support rational, affordable, and patient-centred prescribing in depression.

The present study systematically analyses brand-wise price variation among oral antidepressants available in the Indian domestic market. Price data were obtained from the Current Index of Medical Specialties (CIMS), January–April 2025 edition, and Indian Drug Review (IDR) 2025, Issue 1, 31st year. By quantifying inter-brand price differences, this study aims to provide evidence that may assist clinicians, pharmacists, patients, and policymakers in promoting cost-conscious prescribing, reducing

avoidable financial burden, and supporting long-term treatment adherence.

II. OBJECTIVES

Primary Objective

- To evaluate and compare the cost variations among commercial brands of commonly prescribed oral antidepressants in the Indian market, utilizing pricing data from the *Current Index of Medical Specialties* (CIMS) January–April 2025 and the *Indian Drug Review* (IDR) 2025 Issue 1 (31st Year).

Secondary Objectives

- To document the total number of pharmaceutical brands manufacturing each specific oral antidepressant formulation.
- To calculate the exact cost ratio and percentage price variation between the highest- and lowest-priced brands across identical generic dosage strengths.
- To identify the specific antidepressant agents that exhibit the greatest and least economic volatility within the domestic pharmaceutical market.

III. MATERIALS AND METHODS

Study Design This study utilized a descriptive, cross-sectional pharmaco-economic design to systematically analyse the commercial market prices of various antidepressant medications.

Data Source Pricing parameters were extracted from two comprehensive and widely accepted medical compendiums: the *Current Index of Medical Specialties* (CIMS) January–April 2025 edition and the *Indian Drug Review* (IDR) 2025 Issue 1 (31st Year). These directories serve as trusted, comprehensive guides that provide detailed information on various generic brands, their available strengths, dosage forms, manufacturers, and maximum retail prices (MRP) across the Indian pharmaceutical market.

Inclusion Criteria

- Both single-drug antidepressant formulations and fixed-dose drug combinations.
- All available strengths of oral dosage forms, specifically standardizing the cost evaluation per

10 units for solid forms (tablets/capsules) and per single bottle for liquid forms (syrups).

- Formulations that are concurrently manufactured and distributed in the exact same strength and dosage form by multiple independent pharmaceutical companies.

Exclusion Criteria

- Medications manufactured and supplied exclusively by a single pharmaceutical firm (monopolized formulations).
- Drugs manufactured by different companies that are only available in non-matching or differing dosage strengths.
- All parenteral (injectable) formulations.

Data Analysis

The minimum and maximum retail pricing parameters of all eligible antidepressant medications were logged based on their standardized commercial packaging (10 tablets/capsules or one bottle of syrup). The collected parameters were categorized, tabulated, and analysed using Microsoft Excel. The primary pharmacoeconomic metrics were computed using the following standard equations:

$$\text{Cost Ratio} = \text{Maximum Price} / \text{Minimum Price}$$

$$\text{Percentage Cost Variation (\%)} = [(\text{Maximum Price} - \text{Minimum Price}) / \text{Minimum Price}] \times 100$$

IV. RESULTS

This study analysed the market prices of 20 oral antidepressant monotherapies, comprising 9 distinct dosage formulations. Additionally, 8 fixed-dose

combinations were evaluated. The medications were categorized into five pharmacological classes: Tricyclic Antidepressants (TCAs), Selective Serotonin Reuptake Inhibitors (SSRIs), Atypical Antidepressants, Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs), and Reversible Inhibitors of Monoamine Oxidase-A (RIMAs).

Overall, the data revealed substantial price variations among different brands of the same generic antidepressant. Within the monotherapy group, the highest percentage cost variation was observed for the TCA imipramine 25 mg, which demonstrated a 434.71% price difference, with a cost ratio of 5.35 between its most and least expensive brands. Conversely, the narrowest price margin was documented for the SSRI paroxetine 30 mg, with a minimal variation of 7.38% and a cost ratio of 1.07. The market showed the highest brand density for escitalopram 10 mg, which was manufactured and distributed by 31 independent pharmaceutical companies.

A detailed intra-class evaluation highlighted specific patterns of cost discrepancy. Within the TCA class (Table 1), the pricing landscape was heavily influenced by wide variation margins. Following the peak variation seen in Imipramine 25 mg (434.71%), considerable cost disparities were noted for Dosulepin 75 mg and Dosulepin 25 mg, reaching variations of 371.57% and 337.67%, respectively. The most stable pricing profile within this class belonged to Imipramine (75 mg), which maintained a variation margin of 10.45%.

Table 1: Price variation in TCA (Tricyclic Antidepressant) group of drugs

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Amitriptyline	2 (TAB, ER TAB)	10	16	28.65	12.5	2.29	129
			25	18	29.5	16.13	1.83	83
			50	5	66	24.54	2.69	169
			75	7	84	33.26	2.53	153
2	Amoxapine	1 (TAB)	50	3	90	43.8	2.05	105

			100	3	175	81.16	2.16	116
3	Clomipramine	4 (TAB, ER TAB, FC TAB, SR TAB)	10	3	24.46	16.6	1.47	47
			25	6	66	49.65	1.33	33
			50	5	140	66	2.12	112
			75	5	180	94	1.91	91
4	Dosulepin	2 (TAB, FC TAB)	25	10	66	15.08	4.38	338
			50	5	140	34.5	4.06	306
			75	9	170	36.05	4.72	372
5	Doxepin	2 (TAB, CAP)	10	2	62.37	19	3.28	228
			25	3	111.8	38	2.94	194
			75	2	146.68	100.1	1.47	47
6	Imipramine	3 (TAB, FC TAB, CAP)	25	4	37.43	7	5.35	435
			75	2	27.7	25.08	1.10	10
7	Nortriptyline	1(TAB)	25	7	95	25	3.80	280

TAB = Tablet, ER TAB = Extended-release tablet,
FC TAB = Film-coated tablet,
SR TAB = Sustained-release tablet, CAP = Capsule

Analysis of the SSRI group (Table 2) showed strong price variance across high-volume prescription agents. Fluoxetine (20 mg) topped the class with the highest cost variation of 240.00%. Sertraline

formulations also exhibited steep variance, with its 25 mg, 50 mg, and 100 mg variants demonstrating cost variations of 236.56%, 211.43%, and 204.26%, respectively. Highly competitive markets like Escitalopram 5 mg and 10 mg demonstrated variations of 174.21% and 172.84%. Conversely, the lowest cost variation within this category was recorded for Paroxetine (30 mg) at 7.38%.

Table 2: Price variation in SSRI (Selective Serotonin Reuptake Inhibitors) group of drugs

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Citalopram	2 (TAB, FC TAB)	10	7	64.76	28.4	2.28	128
			20	7	110	51.45	2.14	114
			40	5	139	100	1.39	39
2	Escitalopram	2 (TAB, FC TAB)	5	20	76.78	28	2.74	174
			10	31	136.42	50	2.73	173
			20	20	215.54	99	2.18	118
3	Fluoxetine	3(TAB, CAP, O- SUSP)	10	7	37.07	21.25	1.74	74
			20	22	85	25	3.40	240
			40	4	53	35.49	1.49	49

			60	9	109.83	60	1.83	83
4	Fluvoxamine	2(TAB, FC TAB)	50	9	194.81	120	1.62	62
			100	9	311	196	1.59	59
5	Paroxetine	3(TAB, FC TAB, ER TAB)	10	4	145	57.62	2.52	152
			12.5	8	145	104.5	1.39	39
			20	4	192.9	100	1.93	93
			25	7	195	143	1.36	36
			30	2	225.5	210	1.07	7
			37.5	5	260	190	1.37	37
6	Sertraline	2(TAB, FC TAB)	25	11	66	19.61	3.37	237
			50	21	109	35	3.11	211
			100	13	172	56.53	3.04	204

TAB = Tablet, FC TAB = Film-coated tablet, CAP = Capsule, O-SUSP = Oral suspension
ER TAB = Extended-release tablet

Evaluation of Atypical Antidepressants (Table 3) indicated a sharp division in price volatility. Bupropion (150 mg) showed a prominent maximum

variation of 400.00%. Mirtazapine (7.5 mg) demonstrated an intermediate variation of 157.14%, whereas Trazodone variants recorded comparatively lower thresholds, with Trazodone 25 mg at just 18.52% variation.

Table 3: Price variation in Atypical Antidepressant group of drugs

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Bupropion	4 (TAB, FC TAB, MR TAB, ER TAB)	150	5	400	80	5.00	400
2	Mirtazapine	2(TAB, FC TAB)	7.5	8	90	35	2.57	157
			15	13	120	60.5	1.98	98
			30	10	210	118	1.78	78
3	Trazodone	1(TAB)	25	2	40	33.75	1.19	19
			50	2	82	65	1.26	26
			100	2	120	52.62	2.28	128

TAB = Tablet, FC TAB = Film-coated tablet, MR TAB = Modified-release tablet
ER TAB = Extended-release tablet

In the SNRI class (Table 4), Duloxetine formulations displayed consistent, elevated market volatility, peaking at 352.34% for Duloxetine 30 mg. In

contrast, Desvenlafaxine entries exhibited tightly controlled market pricing, resulting in a minimal

variation of 9.09% for the 50 mg formulation.

Table 4: Price variation in SNRI (Serotonin-Norepinephrine Reuptake Inhibitors) group of drugs

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Duloxetine	2(TAB, CAP)	20	15	146.55	38.5	3.81	281
			30	15	239.15	52.87	4.52	352
			40	8	130	39.59	3.28	228
			60	5	190	89	2.13	113
2	Venlafaxine	3(TAB, ER TAB, CAP)	25	2	15.1	9	1.68	68
			37.5	5	56	43	1.30	30
			75	5	111.13	70	1.59	59
			150	3	213.89	125	1.71	71
3	Desvenlafaxine	1(TAB)	50	2	120	110	1.09	9
			100	2	210	190	1.11	11

TAB = Tablet, CAP = Capsule, ER TAB = Extended-release tablet

pronounced percentage price variation of 280.00% across 6 commercial brands.

For the RIMA segment (Table 5), the single eligible agent Moclobemide (25 mg) demonstrated a

Table 5: Price variation in RIMA (Reversible Inhibitor of MAO-A) group of drugs

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Moclobemide	1(TAB)	25	6	95	25	3.8	280

TAB = Tablet

To provide a comparative overview of all monotherapy entries, Figure 1 illustrates the full

continuum of price variations across the single-drug formulations, sorted in descending order of cost variation.

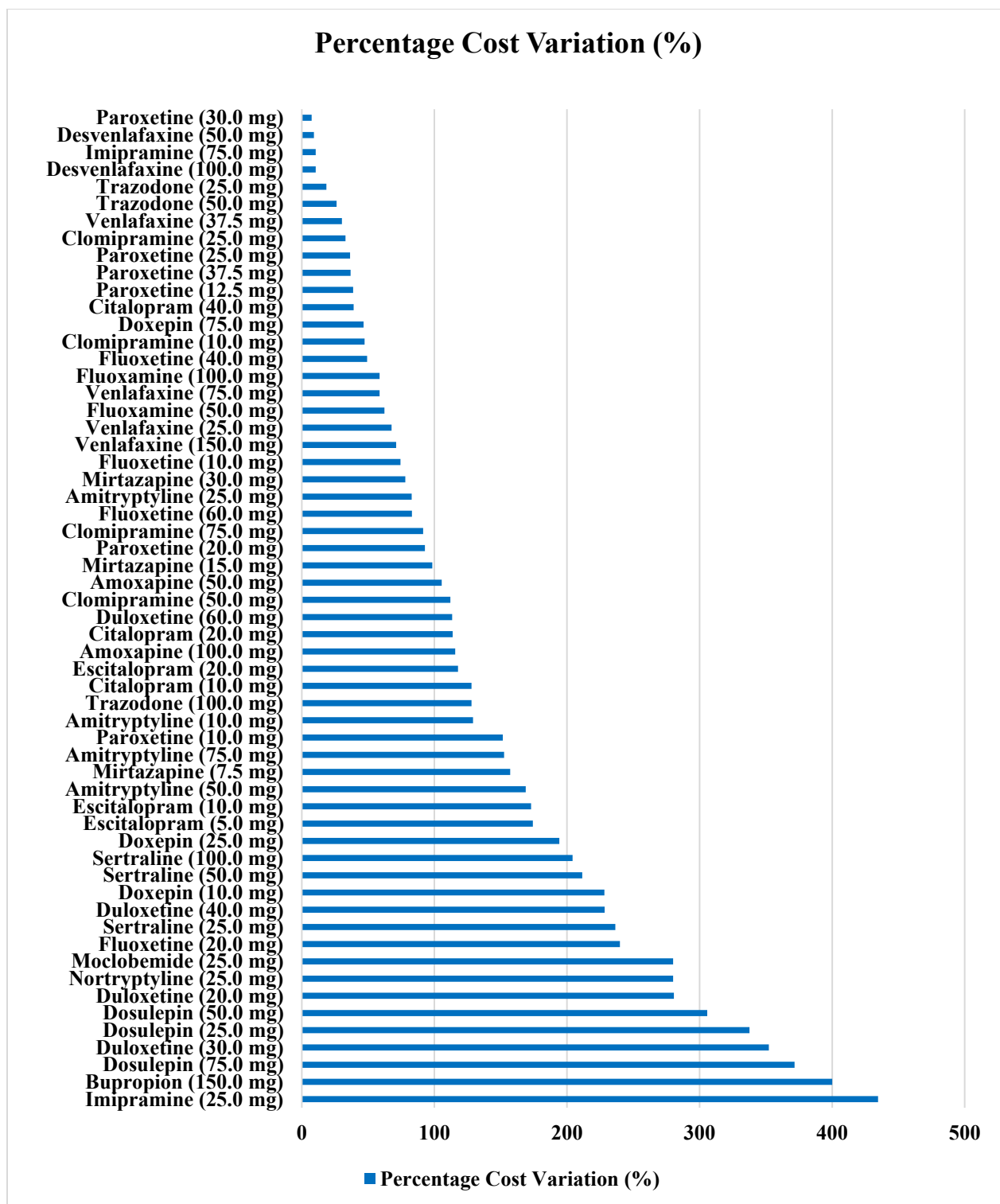


Figure 1: Comparative Percentage Cost Variation Among Oral Antidepressant Monotherapies in the Indian Market. Multi-ingredient fixed-dose combinations (Table 6) introduced notable pricing disparities. Formulations combining Amitriptyline + Chlordiazepoxide showed highly volatile pricing, with a peak variation of 308.65% for the 25+10 mg formulation. High distribution combinations, such as Escitalopram + Clonazepam (10+0.5 mg), showed a 121.43% variation across 19 brands. The narrowest variance was noted for Paroxetine + Clonazepam (12.5+0.5 mg) at 6.06%.

Table 6: Price variation among combination therapy

Sr. No.	Drug Name	No. of Dosage formulations	Strength(mg)	No. of Brands	Maximum Cost in Indian Rupees (INR)	Minimum Cost in Indian Rupees (INR)	Cost Ratio	Percentage Cost Variation (%)
1	Amitriptyline + Chlordiazepoxide	2 (TAB, FC TAB)	25+10	14	85	20.8	4.09	309
			12.5+10	11	54	17.5	3.09	209
2	Desvenlafaxine + Clonazepam	1 (TAB)	50+0.5	2	275	135	2.04	104
			100+0.5	2	245	180	1.36	36
3	Escitalopram + Clonazepam	2 (TAB, ODT)	10+0.5	19	155	70	2.21	121
			10+0.25	3	87	72	1.21	21
			5+0.5	4	117	68	1.72	72
			5+0.25	3	59	50	1.18	18
4	Escitalopram oxalate + Clonazepam	1 (TAB)	10+0.5	4	110	85	1.29	29
			10+0.25	2	66.66	60	1.11	11
5	Escitalopram + Etizolam	1 (TAB)	10+0.5	4	150	89.9	1.67	67
6	Escitalopram + Flupentixol	1 (TAB)	10+0.5	2	86	79	1.09	9
7	Melitracen + Flupentixol	1 (TAB)	10+0.6	3	89.901	42	2.14	114
8	Paroxetine + Clonazepam	1 (TAB)	25 + 0.5	2	190	157	1.21	21
			12.5+ 0.5	2	140	132	1.06	6

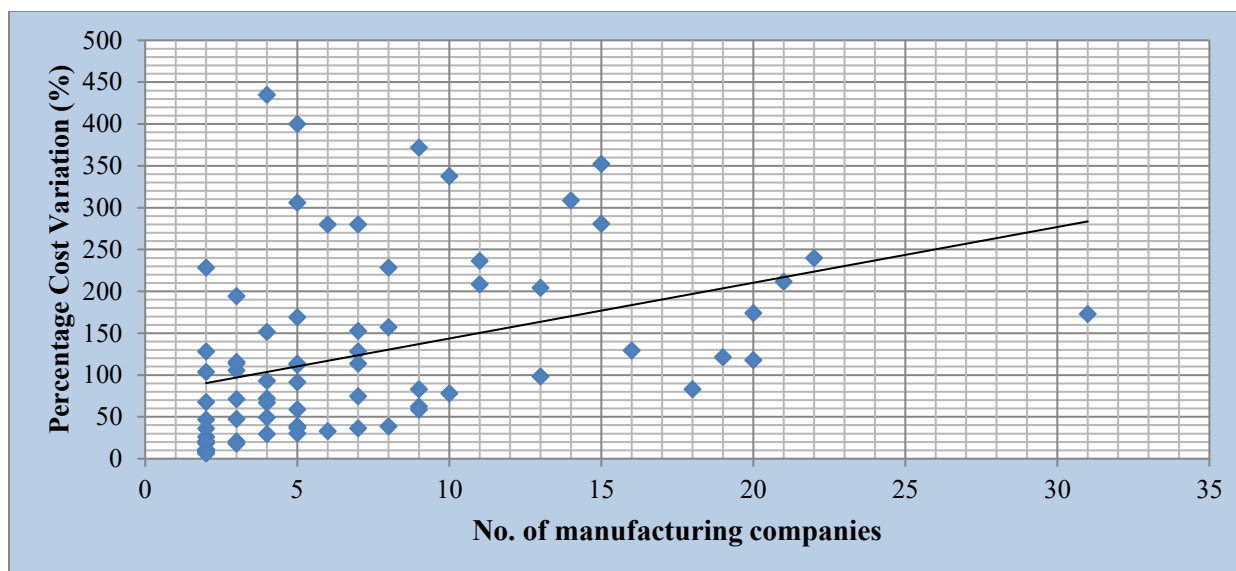
TAB = Tablet, FC TAB = Film-coated tablet, ODT = Orally disintegrating tablet

Correlation Analysis

To evaluate whether the number of manufacturing companies correlates with retail pricing variation, a correlation analysis was executed.

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A Scatter Diagram depicting relationship between Percentage Cost Variation (%) and No. of Manufacturing companies



consequential, and avoidable inter-brand price variation may contribute to financial strain, poor adherence, and premature discontinuation of therapy, particularly among patients requiring long-term treatment. [21-26] Although lower-cost equivalent brands cannot be assumed to directly improve clinical outcomes, cost-conscious prescribing may support affordability and continuity of care when clinically appropriate. Evidence from broader adherence literature suggests that higher patient cost-sharing can adversely affect adherence, while generic initiation may improve antidepressant adherence in some settings. [27,28]

Overall, the present study provides updated evidence using Current Index of Medical Specialties, January-April 2025, and Indian Drug Review 2025 Issue 1 data. By assessing multiple antidepressant classes, fixed-dose combinations, and the relationship between number of manufacturers and cost variation, this study adds to existing Indian pharmaco-economic literature. The persistence of substantial price disparity highlights the need for routine access to comparative drug-price information, greater prescriber awareness, rational generic prescribing where appropriate, and improved price transparency through regulatory mechanisms such as the National Pharmaceutical Pricing Authority.

VI. CONCLUSION

Persistent inter-brand cost variation among oral antidepressants in India has important implications for affordability during long-term depression treatment. Incorporating pharmaco-economic considerations into prescribing, ensuring access to comparative price information, and promoting generic prescribing where appropriate may reduce avoidable out-of-pocket expenditure and improve treatment continuity. Strengthened price transparency and wider regulatory oversight through the National Pharmaceutical Pricing Authority (NPPA) and Drugs Prices Control Order (DPCO) are needed to support more equitable access to antidepressant therapy.

VII. LIMITATIONS

This study has certain limitations. The analysis was based on listed prices from CIMS January–April 2025 and IDR 2025 Issue 1, which may not fully

represent actual patient-level costs due to regional price variation, pharmacy discounts, online prices, hospital procurement, insurance coverage, or Jan Aushadhi pricing. Only oral antidepressants with comparable strengths and dosage forms were included; parenteral preparations, single-manufacturer products, and non-comparable formulations were excluded. The study assessed price variation only and did not evaluate prescription volume, market share, patient adherence, clinical outcomes, or bioequivalence between brands. As this was a cross-sectional analysis, changes in prices and brand availability over time may affect future cost variation.

VIII. DECLARATIONS

Ethical Approval

Ethics committee review and Clinical Trial Registry of India (CTRI) registration were not applicable, as this evaluation was conducted entirely using open, secondary compendium source data.

Conflicts of Interest

The authors declare no financial or academic conflicts of interest regarding the publication of this manuscript.

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