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Original Research Article

Cost variation analysis of commonly prescribed oral antipsychotic drugs available in India-a pharmaco-economic perspective

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ABSTRACT

Background: Antipsychotics are commonly prescribed for a variety of psychiatric disorders which require prolonged treatment. If a costly brand is prescribed, it reduces patient compliance, especially in the lower socio-economic groups. Awareness about the cost variation among different brands will guide an economically effective prescription by the treating physician.

Methods: The cost of different brands of commonly used oral antipsychotic drugs available in the Indian market manufactured by different companies, in the same strength, number and dosage form was obtained from the latest CIMS, MIMS, and India drug Index. The cost ratio and percentage cost variation were calculated for each. The cost for the same drugs was also noted from the Jan Aushadhi generic medicines portal and a comparison was made.

Results: The percentage variation in the cost was above 100% with most of the commonly used antipsychotic drugs like haloperidol (517%), trifluoperazine (504.12%), risperidone (485.27%), chlorpromazine (436.35%), aripiprazole (340.34%), flupenthixol (293.12%), olanzapine (245%), ziprasidone (176.02%), amisulpride (169.44%), quetiapine (163.16%). Percentage cost variation between branded and generic drugs ranged from 400-1050%.

Conclusions: There is substantial cost variation among the various brands of antipsychotic drugs. Stigma surrounding generic prescription needs to be addressed. More psychiatric drugs need to be included under National list of essential medicines and DPCO (Drug price control order) so that there can be a ceiling on the maximum price.

Keywords: Antipsychotic drugs, Cost variation, Pharmaco-economics

INTRODUCTION

Psychosis is a mental disorder characterised by a distorted or absent perception of reality. The majority of psychotic conditions like schizophrenia are chronic and require long-term antipsychotic medication. Treatment reduces 1-year relapse rates from 80% in unmedicated individuals to roughly 15% in medicated patients.¹ Relapse is more likely when antipsychotic treatment is not adhered to. According to the national mental health survey of India, roughly 1.9% of the population has experienced severe mental disorders at some point in their lives, with 0.8% currently experiencing severe mental disorders such as schizophrenia and other non-affective psychoses.² Because treatment adherence has such a large impact on

recovery, any element that influences adherence becomes crucial, the most important of which is treatment cost.

India enjoys an imperative position in the global pharmaceuticals sector. India is the world's top supplier of generic pharmaceuticals. It is also the world's third-largest producer of pharmaceuticals by volume and 14th by value. There are 3,000 drug companies and over 10,500 manufacturing units in the domestic pharmaceutical industry.³

In India, generic pharmaceuticals account for only 8% of the domestic pharmaceutical market. The so-called "branded generics" account for 90% of all prescriptions.⁴ Unbranded generics, on the other hand, are sold under the chemical name and are mostly sold in the retail market by

Jan Aushadhi, a company with little prominence in the country's pharmaceutical sector. Since there are hundreds of branded variants for the same generic formulation, there exists huge information asymmetry. Consumer knowledge of generics, the range of trade names accessible, and price fluctuation are all constrained. To assume that a costlier brand is of a higher quality than a cheaper brand or even the unbranded generic version, when all of them are required to meet the same specifications and standards is not correct. When costlier brands are prescribed, treatment becomes an economic burden and discourages patient from being compliant. Awareness about wide cost variation and availability of equally efficacious cheaper brands will promote economically efficient prescription.

Very few studies have been conducted to analyse the cost variation that exists between different brands that are available in the Indian market for antipsychotic drugs. This study strives to throw light on the same. Aim of the study was to analyse the difference in cost of different brands for the same dosage form of oral antipsychotic drugs by using the cost ratio and percentage cost variation.

METHODS

Cost of particular drug (cost/ 10 tab), in same strength and dosage forms, manufactured by different companies obtained from "current index of medical specialties" mobile application Aug 2021, Jan Aushadhi and national pharmaceutical pricing authority online portals.⁷⁻⁹

Cost ratio between the maximum and minimum cost of the same drug manufactured by different pharmaceutical

companies was calculated as follows: Cost ratio=Maximum cost/ minimum cost.

Percentage cost variation was calculated as follows: % Cost variation=(Max cost - Min cost)/Min cost × 100.

The drug formulation being manufactured by only one company was excluded.

Statistical analysis

The data collected was entered in Microsoft excel 2010. Cost ratio and percentage cost variation were calculated. The data represented is in the form of tables and charts.

RESULTS

This study shows that there is substantial cost variation among the different oral antipsychotic brands available in the Indian market. Percentage cost variation was highest with haloperidol 5 mg (517.41%) followed by trifluoperazine 5 mg (504.12%) and risperidone 2 mg (485.27%) (Table 1) (Figure 1 and 2).

Among the oral antipsychotics, olanzapine, quetiapine, aripiprazole and amisulpride are available in Jan Aushadhi stores as generic drugs. The cost variation was compared between the maximum priced branded generic of same was compared with the generic form available in the Jan Aushadhi store. Olanzapine 5 mg had highest percentage cost variation of 1280%, followed closely by olanzapine 10 mg with 926.88% and risperidone 4 mg with 904.25%, quetiapine 100 mg tablets had the lowest percentage cost variation with 160.61% (Table 2) (Figure 3 and 4).

Table 1: Percentage cost variation of commonly used oral antipsychotic drugs as a single drug therapy.

Drug name	Dose	Formulation	Minimum price (INR)	Maximum price (INR)	Cost ratio	Percentage cost variation (%)
Haloperidol	1.5 mg	Tablets (10)	6.35	26.4	4.16	315.75
	5 mg	Tablets (10)	9.25	57.11	6.17	517.41
Chlorpromazine	25 mg	Tablets (10)	3.06	10.95	3.58	257.84
	50 mg	Tablets (10)	3.65	19.55	5.36	435.62
	100 mg	Tablets (10)	5.64	30.25	5.36	436.35
Trifluoperazine	5 mg	Tablets (10)	4.85	29.3	6.04	504.12
Flupenthixol	0.5 mg	Tablets (10)	20.35	80	3.93	293.12
	1 mg	Tablets (10)	39.6	76	1.92	91.92
Clozapine	25 mg	Tablets (10)	15	28.11	1.87	87.40
	50 mg	Tablets (10)	28	53.63	1.92	91.54
Risperidone	2 mg	Tablets (10)	12.9	75.5	5.85	485.27
	3 mg	Tablets (10)	20.1	70.9	3.53	252.74
	4 mg	Tablets (10)	29	80.34	2.77	177.03
Olanzapine	5 mg	Tablets (10)	20	69	3.45	245
	10 mg	Tablets (10)	36	82.15	2.28	128.19
Quetiapine	25 mg	Tablets (10)	19	50	2.63	163.16
	50 mg	Tablets (10)	33.25	70	2.11	110.53
	100 mg	Tablets (10)	40	86	2.15	115
Aripiprazole	5 mg	Tablets (10)	38.5	71	1.84	84.42
	10 mg	Tablets (10)	32.6	143.55	4.40	340.34
	20 mg	Tablets (10)	94.28	237	2.51	151.38

Continued.

Drug name	Dose	Formulation	Minimum price (INR)	Maximum price (INR)	Cost ratio	Percentage cost variation (%)
Ziprasidone	20 mg	Capsules (10)	30.07	83	2.76	176.02
	40 mg	Capsules (10)	119.18	215	1.80	80.40
Amisulpride	50 mg	Tablets (10)	45	121.25	2.69	169.44
	100 mg	Tablets (10)	75	174.3	2.32	132.40

Table 2: Percentage cost variation of branded and generic oral antipsychotic drugs.

Drug name	Dose	Formulation	Jan Aushadhi (INR)	Maximum brand price (INR)	Branded-generic cost ratio	Branded-generic cost variation (%)
Flupenthixol	0.5 mg	Tablets (10)	10	80	8	700
Risperidone	4 mg	Tablets (10)	8	80.34	10.04	904.25
Olanzapine	5 mg	Tablets (10)	5	69	13.8	1280
	10 mg	Tablets (10)	8	82.15	10.27	926.88
Quetiapine	25 mg	Tablets (10)	10	50	5	400
	100 mg	Tablets (10)	33	86	2.61	160.61
Aripiprazole	5 mg	Tablets (10)	14	71	5.07	407.14
Amisulpride	50 mg	Tablets (10)	26	121.25	4.66	366.35

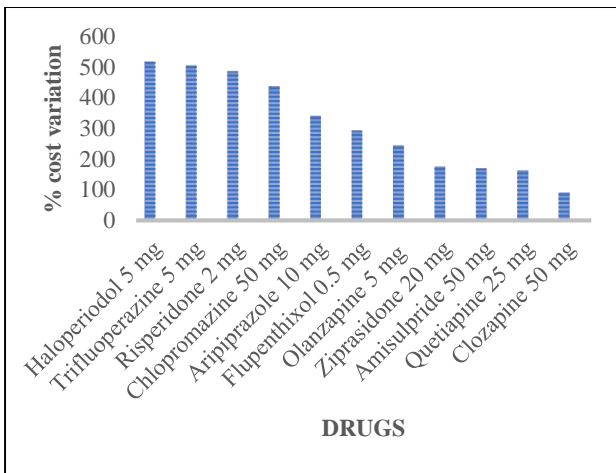


Figure 1: Percentage cost variation of commonly used oral antipsychotic drugs.

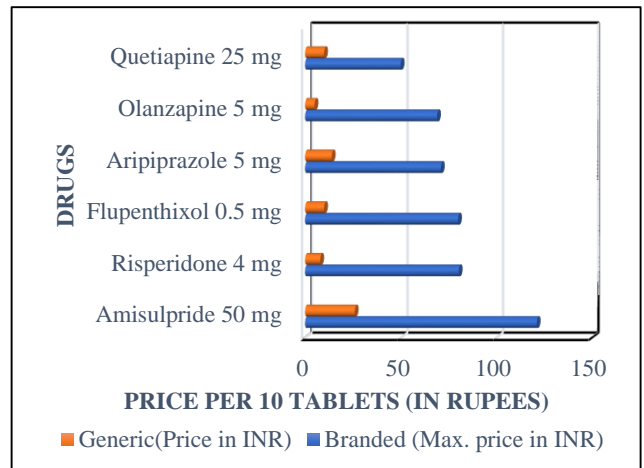


Figure 3: Comparison of branded and generic price of oral antipsychotic drugs.

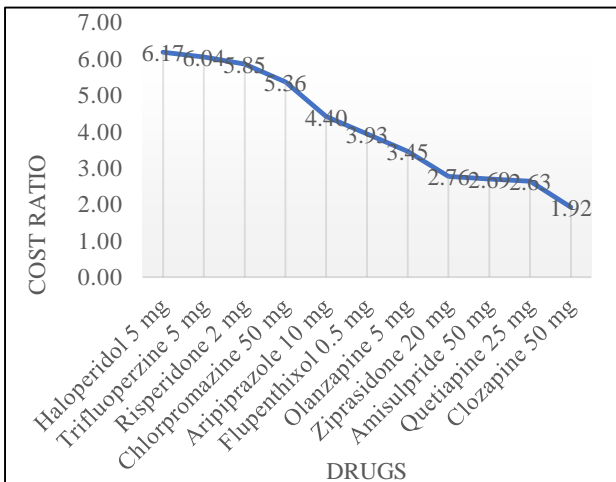


Figure 2: Cost ratio of commonly used oral antipsychotic drugs.

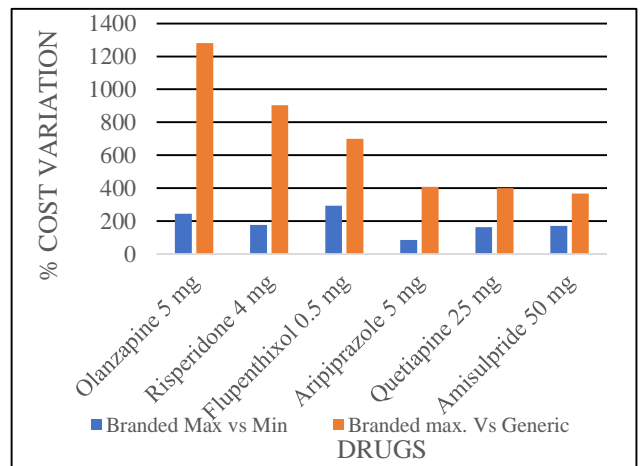


Figure 4: Percentage cost variation comparison of generic and branded forms of oral antipsychotic drugs.

DISCUSSION

The objective of this study was to compute the cost and percentage price variation among the different antipsychotic drugs across different brands available in the Indian market. Our study findings showed a high fluctuation in the minimum and maximum price of antipsychotic drugs which are being manufactured by several companies. The percentage cost variation between maximum and minimum priced brand is over 200% for most of the commonly used antipsychotics and reaches up to a staggering 1200% when compared to generic price from Jan Aushadhi. This is consistent with similar studies done on oral antipsychotic drugs.^{10,11}

Majority of Indian population is not covered under health insurance and the higher the economic burden of treatment, the lower will be the compliance. Since adherence to treatment plays a major role in the outcome of psychiatric illnesses, it is of paramount importance that the treating physician is aware about the significant difference in prices of different brands and takes the economic situation of patient into account while prescribing a particular brand.

In India, there is also a tendency for the pharmacist to give a different brand than the one that is prescribed owing to the profit margin. This adds to the lack of stringent regulations in limiting the wide variations in cost and ultimately has a negative impact on the patient.

In spite of the generic medicines available in Jan Aushadhi being less in cost, there is a general lack of trust, both from patients and the physicians on the quality of these medicines.¹²⁻¹⁴ Hence, adequate measures should be taken to prove that these medicines are equivalent to the highly priced branded counterparts and more awareness should be created about the same.

Strict policies should be framed by the regulatory authorities to keep the prices in check and more drugs should be brought under the Drug Price Control Order. Appropriate action should be taken on the brands that are sold above the maximum ceiling price. Also, the prescribers should be sensitized regarding the cost of different drugs and a manual of comparative drug prices of different generic and brand drugs should be provided for easy reference while prescribing.

Pharmacoeconomics should be given importance and integrated into the postgraduate and undergraduate medical education to sensitize young doctors on the wide variations in cost of different brands and the significant impact it can have on their future patients.

We recommend more pharmacoeconomic studies to be conducted on all classes of drugs and more research on the reasons for hesitancy to use cheaper generic versions of the same drugs. The results should be easily accessible to both medical fraternity and general public.

CONCLUSION

There is substantial cost variation among different brands of oral antipsychotics and the percentage cost variation when compared to the generic counterpart is tremendously high. Stringent regulatory measures, increased awareness both among doctors and patients about availability of equally efficacious cheaper brands is the need of the hour. More psychiatric drugs should be included under DPCO. Pharmacoeconomics should be made part of medical curriculum.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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