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Cost Analysis of Antipsychotics in Indian Markets

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ABSTRACT

Background: Schizophrenia is associated with significant and long lasting health, social and financial burden and pharmacological intervention is the main line of managing patients. But antipsychotic drugs are costly and are one of the main reasons for poor drug compliance in India. So this study was designed to evaluate the cost of antipsychotic drugs of different generic classes and different brand names and to analyze price variation among various antipsychotic drugs available in India.

Methodology: Current Index of Medical Specialities (CIMS) October 2015 - January 2016 was used to analyse the prices of antipsychotic drugs. Cost of each molecule of different strengths was tabulated and cost range, cost difference and % price variation were calculated.

Results: Wide range of cost variations were seen amongst both first and second generation antipsychotics. But very few brands were marketed of first generation. Also 2 each of injectables and syrup brands were available.

Conclusion: Price control mechanism has an important role and is very much important to reduce the cost burden of treatment particularly in India.

KEYWORDS cost analysis, antipsychotics, first generation, second generation, CIMS.

Introduction

Rational use of medicines means patient receiving medication appropriate to the clinical need, at the proper dose, for the proper duration and at the lowest cost. So it is very much important for prescriber to consider cost while writing prescription along with other criteria [1]. Schizophrenia is associated with significant and long lasting health, social and financial burden. Pharmacological intervention is the main line of managing patients and antipsychotic drugs help in suppressing psychotic symptoms and enabling patients to live more meaningful, stable lives with fewer relapses and reducing the need for hospitalization. But antipsychotic drugs are costly and are one of the main reasons for poor drug compliance in India [2]. With increase in number of antipsychotic medicine brands and lack of knowledge about the cost variations in different brands, there can be difficulties in prescribing most cost effective brand to the patient. Therefore it becomes increasingly necessary to examine issues of comparability across different pharmacological agents as well as individual user costs to influence the compliance of patients [3]. This study was designed to evaluate the cost of antipsychotic drugs of different generic classes and different brand names and to analyze price variation among various antipsychotic drugs available in India.

Materials and Methods

Current Index of Medical Specialities (CIMS) October 2015 - January 2016 was used to analyse the prices of antipsychotic drugs. Data about the cost of antipsychotics were collected for all the strength and dosage forms.

1. Cost of a particular drug (per 10 tablets) of various strengths & dosage forms being manufactured by different companies was compared.
2. The drugs manufactured by only one company were also included and minimum and maximum cost was written as same.
3. Parenteral and Syrup formulations were also included.
4. Difference between the maximum & minimum cost of same drug was calculated (Cost Difference).
5. Percentage Price Variation were calculated for each.

Following formula was be used to calculate price variation [4].

$$\text{Percentage price variation} = \frac{\text{Price of most expensive brand - Price of least expensive brand}}{\text{Price of least expensive brand}} \times 100$$

The study was discussed and approved in a departmental review meeting.

Results

Tables 1& 2 show the cost variation of first and second generation antipsychotics respectively. It was observed that number of brands for first generation antipsychotics varied from 1 to 9, with haloperidol having maximum (9 brands). In second generation the number varied from 7 (clozapine) to 23 (olanzapine). There was substantial evidence in the prices of the different brands available. The maximum price variation was observed in commonly used molecule Haloperidol amongst first generation (665%, 0.25mg strength) and in Risperi-

done amongst second generation (1930%, 2 mg strength). The least price variation (barring those where only one brand was available) was seen in haloperidol 20mg strength (7%) amongst first generation and in amisulpride 200mg strength (8%) amongst second generation antipsychotics. It was observed that the price variation was more amongst the lower strengths of the drugs in first generation antipsychotics while such difference was not that evident amongst second generation across different strengths.

Table 3 shows the cost analysis of other than tablets formulations available. There are very limited options available only 2 injectables and 2 syrup formulations. There are not many brands also available for such kind of formulations.

Discussion

Pharmacoeconomics is a branch of health economics, which particularly focuses upon the cost and benefit of drug therapy thereby providing a guide for decision making on resource allocation and in planning process. Government and private healthcare institutes are targeting curtailment of expenditure on drugs for saving in health care costs [2].

It is very much important for the prescribing doctors to know about the cost of drugs to reduce the price burden on patient but there are not many studies carried out on this topic. So we undertook the above study and it is different from previous ones as we have included other formulations apart from oral and also included drugs having only single brands.

We saw that there is less number of brands of first generation antipsychotics compared to second generation. Also first generation are cheaper and equally efficacious to second generation ones [5]. Amongst first generation there were 11 formulations were only one brand was available and 7 formulations amongst second generation. Also there was more number of strengths available in second generation compared to first generation. This shows that now a days not many pharmaceutical companies are interested in producing first generation antipsychotics. There was higher price variation seen amongst lower strengths compared to higher strengths amongst first generation antipsychotics. But such finding was not observed amongst second generation. Our study is in agreement with study by Girish et.al. , who have also observed a variations in cost of antipsychotic drugs when few brands and few drugs were available for treatment [3].

Drug prices are controlled according to drug price control order 2013 (DPCO) [6]. Ceiling price of drugs are fixed by national pharmaceutical pricing authority (NPPA) government of India in accordance with DPCO 2013. So far it has fixed ceiling prices of 509 drug formulation included in the National List of Essential Medicines. Since May 2014 NPPA has notified prices of 251 formulations under DPCO 2013 resulting in benefit of Rs. 558 Crore to consumers [7].

It is important to create awareness about cost effective prescription via [8] –

Undergraduate teaching of price of medicines.

Practical exercise of finding the cheapest brand for each molecule.

Providing doctors updated information of cost of various brands.

Motivating pharmacist to dispense only those brands which the doctor has prescribed rather than those in which he has maximum benefits.

Prescribing generic drugs whenever possible to decrease expenditure of patient on drug.

Modifications in Pharmaceutical Policy changes are urgently required to improve affordability and thereby access to medicines by majority of people.

Table 1 - Cost-analysis of various brands of first generation antipsychotic drugs

Drug	No. Of Brands Included	Strengths (mg)	Min. Cost (INR)	Max. Cost (INR)	Cost Difference (INR)	% Price Variation
Haloperidol	9	0.25	1.96	15	13.04	665%
		1.5	4.10	17	12.9	315%
		5	9.25	32.50	23.25	251%
		10	22.50	41	18.5	82%
		20	45.90	49.10	3.2	7%
Trifluperazine+ Trihexyphenidyl*	6	5+2	7.70	19.50	11.8	153%
		10+2	16	20	4	25%
Chlorpromazine	2	10	4.05	4.05	0	0%
		25	5.95	5.95	0	0%
		50	3.65	8.54	4.89	134%
		100	5.86	11.63	5.77	98%
Thioridazine	1	10	10	10	0	0%
		25	21	21	0	0%
		50	38	38	0	0%
		100	59.15	59.15	0	0%
Flupenthixol	2	0.5	20.25	34	13.75	68%
		1	39.60	48	8.4	21%
		3	76.50	76.50	0	0%
Loxapine	2	10	13.33	34.12	20.79	156%
		25	26.66	70.61	43.95	165%
		50	127.40	127.40	0	0%
Penfluridol	1	20	91.25	91.25	0	0%
Pimozide	2	2	30.10	30.10	0	0%
		4	48.15	72.75	24.6	51%
		10	110.29	110.29	0	0%

***Trifluperazine was described in combination with Trihexyphenidyl only so was included**

Table 2 - Cost-analysis of various brands of second generation antipsychotic drugs.

Drug	No. Of Brands Included	Strengths (mg)	Min. Cost (INR)	Max. Cost (INR)	Cost Difference (INR)	% Price Variation
Olanzapine	23	2.5	11	25	14	127%
		5	19.50	55	35.5	182%
		7.5	28	46	18	64%
		10	38	85	47	124%
		15	60	88	28	47%
		20	84	114.30	30.3	36%
Risperidone	13	0.5	15	15	0	0%
		1	6.82	135	128.18	1879%
		2	13.30	270	256.7	1930%
		3	20.13	405	384.87	1912%
		4	29.90	540	510.1	1706%
Quetiapine(plain)	10	25	16	32	16	100%
		50	25	50	25	100%
		100	40	53	13	33%
		200	78	90	12	15%
		300	110	110	0	0%
Quetiapine SR	6	50	40	45	5	13%
		100	55	110	55	100%
		200	100	140	40	40%
		300	144.70	160	15.3	11%
		400	185	185	0	0%
Amisulpride	8	25	30	30	0	0%
		50	45	55	10	22%
		100	75	89	14	19%
		200	147.60	159	11.4	8%
		300	207	207	0	0%
		400	280	280	0	0%

Aripiprazole	10	5	36	45	9	25%
		10	56	76.50	20.5	37%
		15	80	105	25	31%
		20	99	134	35	35%
		30	139	177.35	38.35	28%
Clozapine	7	12.5	17	17	0	0%
		25	18.10	25	6.9	38%
		50	35	53	18	51%
		100	60	82	22	37%

Table 3 - Cost-analysis of Non-tablet formulations

Drug	No. Of Brands Included	Strengths (mg)	Min. Cost (INR)	Max. Cost (INR)	Cost Difference (INR)	% Price Variation
Chlorpromazine Injection	1	2.5%, 2ml	2.12	2.12	0	0%
Fluphenazine Injection	1	25mg/ml	29.98	29.98	0	0%
Loxapine liquid	1	25mg/ml, 60ml	271.32	271.32	0	0%
Risperidone Syrup	2	1mg/ml, 30ml	42.50	42.50	0	0%
		1mg/ml, 60ml	110	764.10	654.10	594.63%

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