

Antidepressant drugs: evaluation of price variation

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ABSTRACT

Background: Drugs are available in many different brands and costs of all brands are different. Patients of depression have to take the antidepressant drug for a long duration. If the cost of a drug is high patient has to pay more money for complete treatment. It can result in noncompliance and treatment failure. This study was aimed to evaluate the cost of antidepressant drugs of different classes and to analyze price variation in various antidepressant drugs available in India. Hence, we decided to do the study of price variations of antidepressant drugs.

Methods: We had evaluated the cost of a different class of antidepressant drugs. Current Index of Medical Specialties October-December 2014 and Indian Drug Review 2015 issue 1 drug manuals were used to derive the cost of antidepressant drugs. Data about the cost of antidepressant drugs were collected for all the strength and dosage forms. The maximum price and minimum price for the different antidepressant drugs were identified, and calculation for the percentage of price variation was done.

Results: Maximum percentage of price variation in different groups were 900% in reboxetine 2 mg (tricyclic antidepressants group), 495.23% in escitalopram 10 mg (selective serotonin reuptake inhibitors group), 318.66% in duloxetine 20 mg capsules (serotonin and noradrenaline reuptake inhibitors group), 243.58% in moclobemide 150 mg tablet (reversible monoamine oxidase-A inhibitor), 84.93% in bupropion 150 mg sustained-release tablet (atypical antidepressants group). In combination escitalopram 10 mg + clonazepam 0.5 mg shows maximum price variation of 1101.92%.

Conclusion: Price variation was wide for antidepressant drugs. Generic drug prescribing can decrease the expenditure of patient on the drug. Prescribers should be provided updated knowledge of the cost of different drugs. Modifications in pharmaceutical policy are required, and prices of the drug should be controlled in effective way for all the drugs.

Keywords: Price variation, Antidepressant drugs, Brands

INTRODUCTION

Rational use of medicines is that the patient receives medication appropriate to the clinical need, at the proper dose, for the proper duration and at the lowest cost. So for rational prescribing, prescriber should also consider cost while writing prescription along with other criteria of rational use of the drug so that the patient can afford the drug.

According to pharmaceuticals, analysis market of pharmaceutical of India is 3rd in volume and 13th in value and branded generic drugs market is 70-80%. Even though production is more in India, still all people do not get medicines sometimes because of high cost.¹ Prices of drugs are kept at high by manufacturing company² and it makes the drug less affordable for poor people. Poor people pay

60-90% of total healthcare spending for drugs,³ so if cost is low their spending for the drug can be kept at low level.

Depression is a mood disorder, and it is common in women.⁴ A patient with depression has symptoms like feeling of sad and depressed, lack of interest in activities, psychomotor retardation, and suicidal tendency. It affects day to day activity of the patient. Treatment of depression consists of electroconvulsive therapy and antidepressant drugs. For public health, it is important because the patient has more suffering, and it also increase economic burden⁴ and cause disability.⁵ In India, the prevalence of depression found is 15.1%⁵ and according to estimate by the global burden of disease in men and woman prevalence is 5.8% and 9.5% respectively.⁶ According to estimate for global burden of disease depression is among

10 leading cause for the burden of disease. Percentage of disability-adjusted life years for depression was 3% in low and middle-income countries and 5.6% in high-income countries.⁶ Field of psychopharmacology is highly growing and newer drugs are coming in market⁷ to treat psychiatric disorders and price is also high. Newer drugs are promoted to a psychiatrist by claiming that it is superior to older drugs and more safe.⁸ Improper knowledge about the cost of various brands of different antidepressant drugs can lead to difficulties in prescribing most cost effective treatment regime for the patient. So this study was designed to evaluate the cost of antidepressant drugs of different generic classes and different brand names and to analyze price variation among various antidepressant drugs available in India.

METHODS

Evaluation of the cost of a different class of antidepressant drugs was done. The cost of antidepressant drugs was derived from Current Index of Medical Specialities October-December 2014 and Indian Drug Review 2015 issue 1 drug manuals. Data about the cost of antidepressant drugs were collected for all the strength and dosage forms. We had compared the data of cost (pre 10 tablets) of the specific antidepressant drug in same strength and same dosage form that was manufactured by different pharmaceutical companies. There was the exclusion of the some strength of drugs which are manufactured by only one pharmaceutical company.

Data analysis

The maximum price and minimum price for the different antidepressant drugs were identified, and calculation for the percentage of variation in price was done.

Following formula was used to calculate price variation.⁹

Percentage price variation

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

RESULTS

There are five groups of antidepressant drugs. The cost was identified for 8 drugs and 31 formulations in tricyclic antidepressants (TCAs) group, 6 drugs and 36 formulations in selective serotonin reuptake inhibitors (SSRIs), 2 drugs and 18 formulations in serotonin and noradrenaline reuptake inhibitors (SNRIs), 4 drugs and 11 formulations in atypical antidepressant group of drugs and one drug and one formulation in reversible inhibitor of monoamine oxidase - A (RIMS). There was three combination of antidepressant drugs available in 9 different formulation. There were 10

dosage formulations in venlafaxine which was maximum among all drugs. There was 28 manufacturing company for escitalopram 10 mg tablet which was maximum than other drugs. The maximum price was 400 Rs. (for 10 tablets) for bupropion 150 mg in single drug and 750 Rs. (for 10 tablets) for escitalopram 10 mg + clonazepam 0.5 mg in combinations.

Single drug

Maximum percentage of price variation in different groups were 900% in reboxetine 2 mg (TCAs group) (Table 1), 495.23% in escitalopram 10 mg (SSRIs group) (Table 2), 318.66% in duloxetine 20 mg capsules (SNRIs group) (Table 3), 243.58% in moclobemide 150 mg tablet (RIMS) (Table 4), 84.93% in bupropion 150 mg sustained release tablet (atypical antidepressants group) (Table 5). Minimum percentage price variation in different groups were 0.59% in fluvoxamine 50 mg film coated (FC) tablet (SSRIs group) (Table 2), 0.80% in imipramine 75 mg capsules (TCAs group) (Table 1), 3.45 % in mirtazapine 15 mg FC tablet (atypical antidepressants group) (Table 5), 7.50% in venlafaxine 75 mg (SNRIs) (Table 3).

Combinations

Table 6 shows price variation between various combinations of antidepressant drugs. Total 3 combination therapies were analyzed. In combination escitalopram 10 mg + clonazepam 0.5 mg shows maximum price variation of 1101.92% while amitriptyline 25 mg + chlordiazepoxide 10 mg (FC) shows minimum price variation of 10.87% (Table 6).

There are 29 single drug formulations having price variation 100% or more than 100% and three combinations of drugs shows price variation of more than 100%.

DISCUSSION

For rational drug use cost is important factor and prescribers are not aware of all different brands of drugs available and their prices. So such studies about comparing the cost of a different class of drugs and their different brands can provide some knowledge to prescriber about the cost of different drugs in the specific disease condition. Such studies are limited in number.

We found wide variation in the price of different antidepressant drugs. Among different dosage formulation of antidepressant drugs 32 dosage formulations have price variation 100% or more than 100%, only 2 dosage formulations of drugs have price variation <1%. Highest price variation was 900% for reboxetine 2 mg tablet, and lowest was 0.59% for fluvoxamine 50 mg FC tablet.

Drugs are available with different brand names and prices of all the brands are different. Drug prices are controlled according to drug price control order 2013 (DPCO).¹⁰ Ceiling price of drugs are fixed by national pharmaceutical pricing authority (NPPA)

Table 1: Price variation in drugs of TCAs group.

Drug	Formulation	Doses (mg)*	Number of manufacturing companies	Minimum price (Rs.)	Maximum price (Rs.)	% price variation
Imipramine	5	25	6	6.75	13.58	101.19
		75	3	15.2	22.5	48.03
		25 (FC tablet)	3	7.4	9.85	33.11
		75 (FC tablet)	3	21	28.25	34.52
		75 (capsules)	2	27.48	27.7	0.80
Amitriptyline	8	10	15	8.8	23	161.36
		25	19	14.3	39.2	174.13
		50	6	24	39.7	65.42
		75	8	20	61	205.00
		10 (FC tablet)	3	9	24.4	171.11
		25 (FC tablet)	3	16	36.5	128.13
		50 (FC tablet)	2	18.3	19.5	6.56
		75 (FC tablet)	3	26	66.6	156.15
		Doxepin	3	10	2	14.9
25	2			27.9	46.2	65.59
75	2			47.5	67	41.05
Dosulepin	6	25	10	14.74	30	103.53
		50	2	34.5	38.7	12.17
		75	8	35.25	75	112.77
		25 (FC tablet)	3	17	42	147.06
		50 (FC tablet)	3	27	83	207.41
		75 (FC tablet)	3	39.5	79.5	101.27
Clomipramine	4	10	3	15.29	54	253.17
		25	4	31.3	61	94.89
		50	3	54.5	94.5	73.39
		75 (SR tablet)	3	94.90	137	44.36
Nortriptyline	1	25	4	12.5	23.7	89.60
Amoxapine	2	50	3	38.82	50	28.80
		100	3	71.93	95	32.07
Reboxetine	2	2	2	16	160	900.00

*Only dose mentioned that all are in tablet form and short form used. FC: Film coated, SR: Sustained release, CAP: Capsules, TCA: Tricyclic antidepressants

government of India in accordance with DPCO 2013. The price of drugs is revised every year according to the wholesale price index. For current year compendium of prices has been released by NPPA, it is showing ceiling price fixed for current year and includes 509 drug formulation of essential medicine list 2011.¹¹ There were 80-85% of drugs in 1979 and 15-20% drugs in 2002 were under price control in India.¹²

According to DPCO 2013 all drugs in the national list of essential medicine 2011 should be under price control. In antidepressant drugs only amitriptyline tablets 25 mg, fluoxetine hydrochloride capsules 20 mg, imipramine tablets 25 mg, 75 mg are in national list of essential medicine 2011 and they are included in DPCO 2013.¹⁰ All antidepressant drugs are not in drug price control. Drugs

in the national list of essential medicine and included in DPCO 2013.¹⁰ like amitriptyline tablets 25 mg, fluoxetine hydrochloride capsules 20 mg, imipramine tablets 25 mg and 75 mg also shows high price variation in our study. Study of price variation has been done for psychosis and diabetes they also found wide price variation among various brand of drugs.^{13,14}

There should be undergraduate teaching about the cost of medicine because the price of drugs is variable. Practical exercise can be kept that for a particular disease to find the cheapest medicine from all the brands, find total brand available for particular drug and calculate the cost of therapy. The doctor who is really prescribing the medicine should have data for cost of different drugs that can be

Table 2: Price variation in drugs of SSRIs group.

Drug	Formulation	Doses (mg)*	Number of manufacturing companies	Minimum price (Rs.)	Maximum price (Rs.)	% price variation
Fluoxetine	6	10	3	15	30	100.00
		20	7	25	48	92.00
		10 (capsule)	4	15.7	33	110.19
		20 (capsule)	20	23.65	52.8	123.26
		60 (capsule)	7	55.8	98	75.63
		20 mg/5 ml	2	29.9	52.1	74.25
Fluvoxamine	4	50	7	94.1	121	28.59
		100	7	158.2	215	35.90
		50 (FC tablet)	2	102	102.6	0.59
		100 (FC tablet)	2	180	183.6	2.00
Paroxetine	8	10	3	70	72.98	4.26
		20	3	100	110.78	10.78
		12.5 mg (CR tablet)	4	85	95	11.76
		25 (CR tablet)	4	112	130	16.07
		37.5 (CR tablet)	3	160	190	18.75
		10 (FC tablet)	2	77.8	87.5	12.47
		20 (FC tablet)	2	103	110.2	6.99
		30 (FC tablet)	2	142	155.5	9.51
		Sertraline	6	25	9	17.5
50	22			24	63	162.50
100	16			44	88	100.00
25 (FC tablet)	3			20	31	55.00
50 (FC tablet)	4			35	58.75	67.86
100 (FC tablet)	4			50	83.7	67.40
Citalopram	6	10	7	21	40	90.48
		20	7	38	73	92.11
		40	4	69	115.5	67.39
		10 (FC tablet)	2	31	36	16.13
		20 (FC tablet)	2	55	62	12.73
		40 (FC tablet)	2	98	103	5.10
Escitalopram	6	5	19	23.8	119	400.00
		10	28	30	178.57	495.23
		20	15	75	131.2	74.93
		5 (FC tablet)	6	30	40	33.33
		10 (FC tablet)	6	54	80	48.15
		20 (FC tablet)	6	100	134	34.00

*Only dose mentioned that all are in tablet form and short form used. FC: Film coated, CR: controlled release, SSRI: Selective serotonin reuptake inhibitors

done by providing updated information of cost of various brand of drugs in the manual.¹⁴ The pharmacist also has role in this system. Some pharmacist also don't give the same brand of drug that is prescribed, they change it and give some costly drug. Pharmacist has some gain in selling that brand of drug.¹⁵ Sometimes small pharmacy store only some brand of drugs not all so patient has to buy that brand of drug. Patient compliance is poor for the expensive brands; they buy only a few tablets because of the high

cost of medicine. It has been seen that there are 2-fold to 100-fold variations in price of drugs so it becomes tough for prescribing doctor to choose the drug.¹⁶

CONCLUSION

Doctor, who is prescribing the drug, should have updated knowledge of cost along with the safety and efficacy of drugs. Drug manuals comparing the cost of drugs should

Table 3: Price variation in drugs of SNRIs.

Drug	Formulation	Doses *(mg)	Number of manufacturing companies	Minimum price (Rs)	Maximum price (Rs)	% price variation
Venlafaxine	10	37.5	5	28.3	50	76.68
		75	2	80	86	7.50
		37.5 (capsule)	3	13.5	45	233.33
		75 (capsule)	3	26.5	80	201.89
		150 (capsule)	2	108.85	150	37.80
		37.5 (ER tablet)	3	25	52	108.00
		75 (ER tablet)	4	38	98	157.89
		150 (ER tablet)	2	75	87.1	16.13
		37.5 (SR capsule)	2	20.3	35	72.41
		75 (SR capsule)	2	39.6	65	64.14
		37.5 (XR capsule)	4	19	49.9	162.63
		75 (XR capsule)	3	38	58	52.63
		150 (XR capsule)	3	75	113	50.67
Duloxetine	8	20	11	41.55	55	32.37
		30	8	60.5	77.5	28.10
		40	5	79.5	105	32.08
		60	4	119.5	152	27.20
		20 (capsule)	9	14.9	62.38	318.66
		30 (capsule)	9	55	89	61.82
		60 (capsule)	4	110	120	9.09
		20 (EC capsule)	2	46	52.8	14.78

*Only dose mentioned that all are in tablet form and short form used. ER: Extended release, XR: Extended release, SR: Sustained release, EC: Enteric coated, SNRI: Serotonin and noradrenaline reuptake inhibitors

Table 4: Price variation in drug of reversible MAO-A inhibitor group.

Drug	Formulation	Doses (mg)	Number of manufacturing companies	Minimum price (Rs.)	Maximum price (Rs.)	% price variation
Moclobemide	1	150 (tablet)	2	19.5	67	243.5897

MAO-A: Monoamine oxidase-A

Table 5: Price variation in drugs of atypical antidepressants group.

Drug	Formulation	Doses *(mg)	Number of manufacturing companies	Minimum price (Rs)	Maximum price (Rs)	% price variation
Trazodone	3	25	6	11.5	18	56.52
		50	6	20.6	34	65.05
		100	3	38.81	45.15	16.34
Mianserin	2	10	3	17.2	26.9	56.40
		30	3	45.7	65.5	43.33
Mirtazapine	4	7.5	5	35	48.3	38.00
		15	10	58	74	27.59
		30	6	115	130	13.04
		15 (FC tablet)	2	58	60	3.45
Bupropion	2	150 (SR tablet)	2	73	135	84.93

*Only dose mentioned that all are in tablet form and short form used. FC: Film coated, SR: Sustained release

be provided to the doctors. Patient compliance will be good if drugs are less costly. Generic drug prescribing can decrease the expenditure of patient on the drug. Price

variation was wide for antidepressant drugs. Modifications in pharmaceutical policy are required, and prices of the drug should be controlled in effective way for all the drugs.

Table 6: Price variation in combinations of antidepressants drugs.

Drug	Formulation	Doses *(mg)	Number of manufacturing companies	Minimum price (Rs)	Maximum price (Rs)	% price variation
Amitriptyline+ chlordiazepoxide	4	12.5+5	8	9.9	25	152.53
		25+10	15	13.4	43.85	227.24
		12.5+5 (FC tablet)	3	15	17.5	16.67
		25+10 (FC tablet)	3	23	25.5	10.87
Imipramine+ diazepam	3	25+2	5	8.4	15	78.57
		25+5	7	8.62	14.5	68.21
		25+2 (FC tablet)	2	9.5	15.11	59.05
Escitalopram+ clonazepam	2	10+0.5	16	62.4	750	1101.92
		10+0.5 (FC tablet)	3	63	94	49.21

*Only dose mentioned that all are in tablet form and short form used. FC: Film coated

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