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Original Research Article

Pharmacoeconomic Analysis of Various Brands of Antipsychotic Drugs and Prescribing Pattern in a Secondary Care Hospital

Kanamala Arun Chand Roby*, K.Rahul, K. Harinadh babu, M. Gowtham Kumar, M. Sri Divya
Assistant Professor,* Pharm D Students
Department of Pharmacy Practice, Vikas Institute of Pharmaceutical Sciences, Rajahmundry, Andhra Pradesh, India

***Corresponding author**
Kanamala Arun Chand Roby
Email: arunchandroby@gmail.com

Abstract: To analyze the cost effectiveness of antipsychotic medication and prescribing pattern. The cost of different brands of antipsychotics was sorted by referring CIMS, MIMS, and patient profile form. Antipsychotic prescription pattern are fundamentally different across countries and regions due to variations in factors including health care policies availability and cost of drugs.Antipsychotics is a class of agents which are able to reduce psychiatric symptoms in a wide range of conditions like schizophrenia, bipolar disorder, psychotic depression, sensilepsychosis, various organic psychosis and drug induced psychosis. It's a prospective observational study carried out in a psychiatric hospital Rajahmundry for a period of six months from Feb-July 2016. All the patients using antipsychotic drugs are 18-60years of age. The prescription was analysed by WHO indicators. Average number of antipsychotics prescribed are atypical include Olanzapine 5mg, 3mg, Aripiprazole 10mg, Quetapine 100mg, Clozapine 200mg. whereas typical include haloperidol 0.25mg, Trifluperidol and Trihexyphenidyl. The average cost of generic drug is provided to be no way superior to its economically cheaper counterpart. The drug to be prescribed in generic to save patients money and its compliance. Psychotic illness patients mainly advised monotherapy of antipsychotic drugs and if it should be in generic to save the patients money and to avoid extrapyridimal side effects.
Keywords: pharmacoeconomic, cost effectiveness, schizophrenia, psychotic illness, psychotic drugs.

INTRODUCTION:

Pharmacoeconomic is a branch of health economic, which particularly focuses upon the cost and benefit of drug therapy [1]. Pharmacoeconomic serves to provide a guide for decision making on resource allocation and in planning process. The World Health Organization addressed drug utilization as the marketing, distribution, prescription, and use of drugs in a society considering its consequences, either social or economic. The therapeutic practice is expected to be primarily based on evidence provided by pre-marketing clinical trials [2] but complementary data from post marketing periods are needed to provide an adequate basis for implementing drug therapy. Anti-psychotic [5, 7, and 19] drugs help many people with schizophrenia [4] by suppressing their psychotic symptoms and enabling them to live more meaningful stable lives with fewer relapses and reducing the need of hospitalization. Pharmacological intervention is the commitment mode of managing patients with schizophrenia, both clinicians and patients are concerned that anti-psychotic drugs are costly [2, 5] and contribute to poor drug compliance in India. The study compared the equivalent doses of anti-psychotic drugs and costs across the brands [5, 6, 13]. Although, anti-psychotic medications [4] shows remarkable impact on psychiatric practice that legitimately can be called as revolutionary. The members of drugs/brands available currently for each anti-psychotic drug[3,5] has steadily increase with the influx of so many brands it becomes increased necessary to examine issues of comparability across different pharmacological agents as well as individual user costs and discuss other issues that influence prescribing[5,9] and compliance. The current study is an attempt to look for the trend of prescribing patterns [3] and pharmacoeconomic analysis [5].

MATERIALS AND METHODS:

It is prospective observational study was carried out for six months. All of the patients using anti-psychotic drugs between 18 to 60years of age irrespective of sex were also included in the study. About 250 prescriptions were seen and recorded with their names, age, sex, diagnosis as per ICD-10, no of drugs given per prescription, routes of administration, classes of drugs used in combination with same group and with other groups the different brands of commonly used anti-psychotic drugs were sorted out by referring

Indian Drug Review (IDR), Current Index of Medical Specialties (CIMS), Monthly Index of Medical Specialties (MIMS). The cost of each brand, cost range, and cost ratio were calculated.

Study setting: The study was conducted in the psychiatric hospital Rajahmundry AP. India.

Study duration: The duration of the study was six months February to July 2016.

Study design: The current study was designed as a cross sectional uni-centric drug utilization and cost effective study.

Subject selection criteria: The subject who had willingly participated was enrolled on the basis of inclusion and exclusion criteria. All the patients between 18-60 years of age using anti-psychotic drugs.
Study population: The present study was conducted on 250 patients who visited psychiatric hospital during February to July 2016.

Parameters for evaluation: The parameters included age, gender distribution, age of the patient, type of illness, type of anti-psychotic medication prescribed in generic form average no of drugs per prescription percentage of drugs , prescribed from National List of Essential Medications(NLEM) and injectables prescribed per day.

Exclusion criteria: Pregnant, lactating, unable to comply due to mental retardation, any systemic illness, unconsciousness and drug addiction were excluded from the study.

RESULTS:

In the six month study period conducted in a psychiatric secondary care hospital Rajahmundry with patient's demographic details and their history of medications were analyzed with cost and prescription based on ICD-10. In this study a total of 250patients are taken who are under anti-psychotic mono-therapy.

Table.1 shows demographic details.

Arithmetic Mean for Age table= ΣfX/Σf = 32.64

Standard deviation = $\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$ **= 55.12595**

Mean for Gender = 125, Standard deviation = 10

Table 1: shows the age and gender wise distribution

Age (x)	No of patients (f)	Percentage
18-30	142	56.80
31 -40	45	18.00
41 -51	36	14.40
51 -60	27	10.80
Gender	**No of patients**	**Percentage**
Male	135	54.00
Female	115	46.00

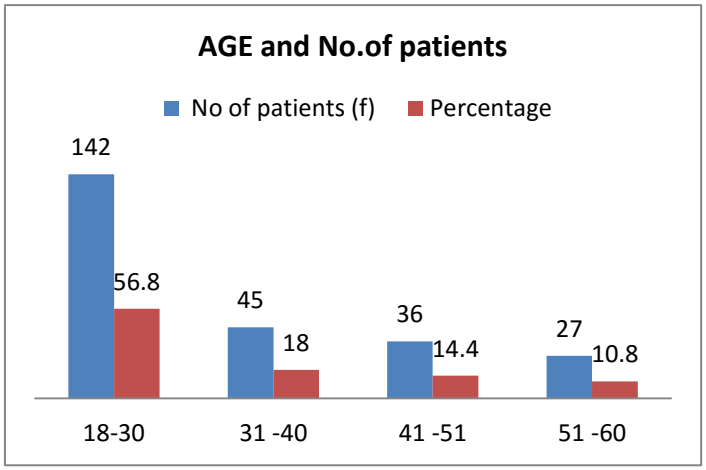

Fig-1: It shows the distribution of diseases in the various age groups

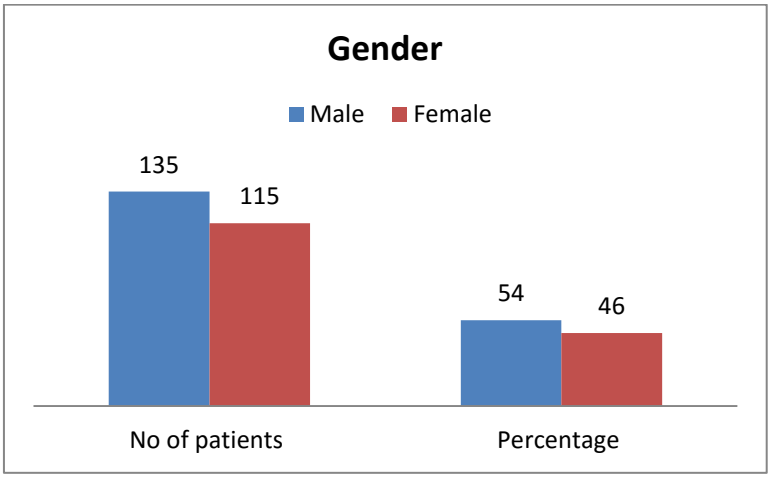

Fig-2: Shows the distribution of disease in the both sexes

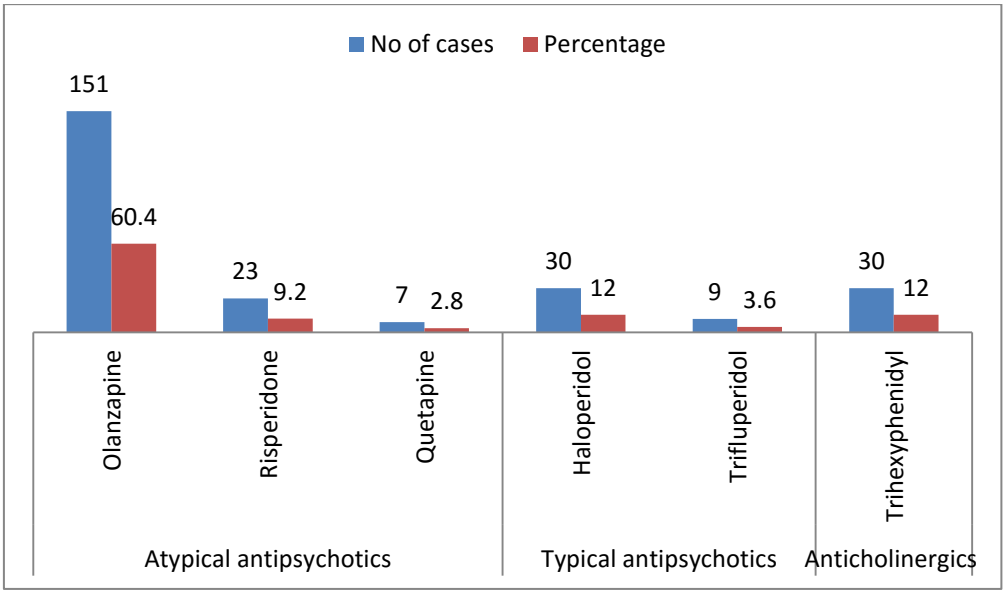

Fig-3: Distribution of drugs

Table 2: Frequency of diseases in the department of psychiatry according to ICD-10

ICD-10	Percentage (N=250)
F20.0- paranoid schizophrenia	72
F23- acute and transient psychotic disorder	65
F20.3-undifferentiated schizophrenia	63
F31.2-Bipolar effective disorder	17
F23.2-Acute schizophrenia like psychotic disorder	3
F22-Persistent delusional disorder	3

Table 3: Different classes of anti-psychotic drugs

Antipsychotics	**Anticholinergics**	**Sedative and hypnotics**	**Antidepressants**
49.6%	35%	12.2%	3%

Table 4: It Shows Distribution of drugs (total no prescribed drugs (N=250) and percentage

Type of drug	Name of drug	No of cases	Percentage
Atypical antipsychotics	Olanzapine	151	60.4
		23	9.2
	Quetapine	7	2.8
Typical antipsychotics	Haloperidol	30	12
	Trifluperidol	9	3.6
Anticholinergics	Trihexyphenidyl	30	12

***Mean = 250/6 = 41.66**

Table 5: Showing cost analysis of various brands of different antipsychotic drugs

S. no	Drug name	Strength doses in tablet form	Minimum cost (INR)	Maximum cost (INR)	Cost difference(INR)	Cost ratio
1	Olanzapine	5mg 10mg 15mg	19.50 38.00 65.00	240 470 87.6	220.05 432.00 22.60	1:12.3 1:12.36 1:1.34
2		1mg 2mg 3mg 4mg	6.82 13.30 20.13 29.50	14.00 24.00 29.00 37.00	7.18 10.7 8.87 7.50	1:2.05 1:1.80 1:1.44 1:1.25
3	Chlorpromazine	25mg 50mg 100mg	1.79 2.84 5.06	5.95 8.50 11.60	4.16 5.66 6.54	1:3.3 1:2.9 1:2.3
4	Aripiprazole	10 mg 15 mg 20 mg 30 mg	52.00 70.00 99.10 97.10	144.00 195.00 237.35 125.00	92.00 138.00 80.25 125	1:2.77 1:2.78 1:2.39 1:1.82
5	Quetapine	25 mg 50 mg 100 mg 200 mg	16.00 25.00 40.00 78.00	32.20 46.00 56.00 103.00	16.20 2100 16.00 25.00	1:2.01 1:1.84 1:1.4 1:1.32
6	Trifluperazine	5 mg	4.48	40.00	5.52	1:2.23
7	Amisulpuride	50 mg 100 mg 200 mg	47.70 77.40 147.60	57.00 92.00 165.00	9.30 14.60 17.40	1:1.19 1:1.18 1:1.11
8	Ziprasidone	20 mg 40 mg 80 mg	30.20 59.90 51.60	44.30 89.00 119.60	14.30 29.10 68.00	1:1.46 1:1.48 1:2.31
9	Haloperidol	0.25 mg 1.5 mg 5 mg 10 mg	1.96 4.10 9.25 16.13	15.00 17.00 41.48 58.54	13.05 12.90 32.23 42.41	1:7.65 1:4.14 1:4.48 1:3.62

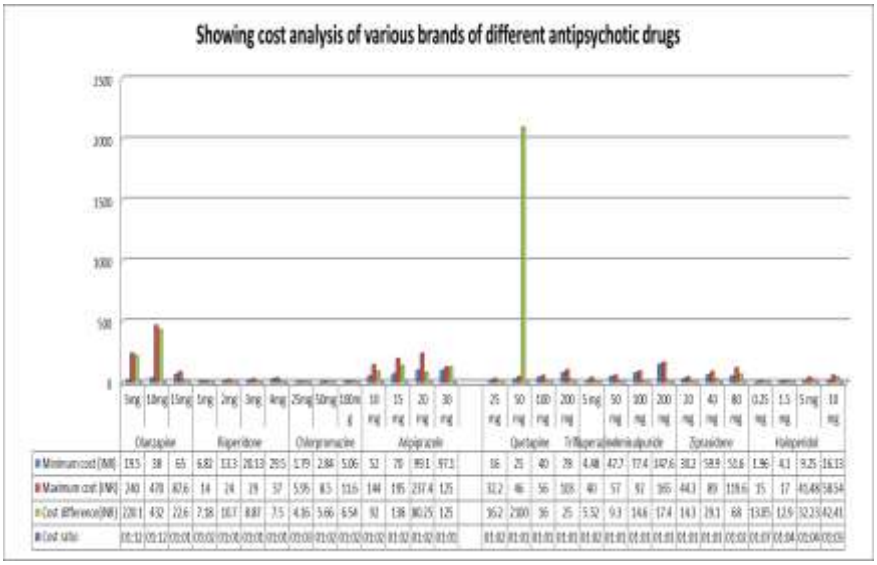

Fig-4: Showing cost analysis of various brands of different antipsychotic drugs

DISCUSSION:

Among 250 patients in this study received antipsychotic drug regimen based primarily on atypical drugs. This means that atypical antipsychotics [3, 5, 7] with and without other adjuvant medication are more commonly prescribed. The data was based on prospective observational study conducted in a period of six months in 250 patients. In this study we analyzed the data of out patients with hospital diagnosed as psychiatric patients were standardized with age, sex, stratified of illness based on prior hospitalization. Within the group of atypical antipsychotics Olanzapine [9, 13, 5, and 18] are frequently prescribed, approximately 25-60% of patients are treated with Olanzapine. As expected patients on atypical antipsychotics received significantly less Anticholinergic medication [7, 2, 1] and this is in accordance with literatures. Hypnotics and anxiyolytic drugs [1, 19, 23] were prescribed less often in patients receiving atypical antipsychotics. From the age group more males135 (54%) are psychiatric patients compared to female patients 115(46%) and also highly on age group of 18-30years (56.8%) are in antipsychotic treatment [15, 22]. Mainly the patients are suffered with paranoid schizophrenia of 72(28.8%), and acute transient psychotic disorder 65(26%), and undifferentiated schizophrenia [16, 22] 63(25.2%).

Distribution of drugs mainly are from atypical (Olanzapine of 151 (60.4%) patients and haloperidol and trihexyphenydil of 30(12%) are prescribed. Classes of antipsychotic drugs [11, 17] highly prescribed are antipsychotics [6, 3] of 49.6%, Anticholinergics of 35%, sedative and hypnotics of 12.2% and antidepressants 3%. Showing the cost analysis of various brands of different antipsychotics [14, 15, 1] drugs, there is a gross variation in the cost of different brands of generic drugs. The most of the drugs are available in brands and there are also prescribed by clinicians mostly in brand name. This may affect the patient finances adversely if costly brands [13, 18] are prescribed in disease which needs treatment for long duration. There is so much difference in direct costs [17, 23], health state and utility of treatment between first and second generation. Conventional anti-psychotics had lower costs and higher quality life years than atypical anti-psychotics and were more effective.

In the present study of cost analysis of various anti-psychotic brands [7, 9]. It has been observed that there is a substantial variation in the cost of different brands of same drugs. The cost ratio also observed is to be very high it has been observed that doctors have sub optimal awareness of drug cost[13,22,23] which can be improved by drug cost, is given greater emphasis during medical training programme of doctors. It reduce the cost of drug it is necessary to prescribe drug in generic. This help to enhance the patient's compliance.

CONCLUSION:

To conclude our study atypical anti-psychotic were the most common drugs prescribed in patients with psychotic illness and were accordance with the treatment done in our state and country also. Olanzapine is the most common medication used followed by Risperdone orally and haloperidol as I.V. if a costly brand is prescribed for the patients to pay more many unnecessarily for their treatment. The costly brand of generic drugs is provided to be in no way superior to its economically cheaper counterpart. They should be prescribed in generic in generic to save the patients money and to enhance the compliance. For the

observational study required to identify cost effective of anti-psychotic use.

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REFERENCES:

1. Alan S Nies. Principles of Therapeutics. In: Joel G Hardman.DE Limbild editors. Goodman and Gilmans the Pharmacological basis of Therapeutics. 2001: 54-57.
2. Ghosh S, Bhattacharyya S, Dalai CK. Antipsychotic prescribing pattern in a tertiary care hospital of Eastern India. Journal of Drug Delivery and Therapeutics. 2013 Jul 13; 3(4):38-42.
3. Paul PK, Konwar MA, Das SW. To study the prescribing pattern of antipsychotic drugs in a tertiary care hospital of Assam. Int J Pharm Sci. 2014; 6(4):4-6.
4. Ihbeasheh M, Jarar I, Sweileh W. A Retrospective Analysis of Antipsychotic Medication Use with Concomitant Clinical Evaluation in Outpatient Psychiatry Department in Palestine. Advances in Pharmacology and Pharmacy. 2014 May; 2(3):47-53.
5. Chimurkar LV, Reddy PS, Verma S. Pharmacoeconomic Study of Various Brands of Antipsychotic Medications. In indian journal of pharmacology 2013 dec 1 (vol. 45, pp. S246-s246). B-9, kanara business centre, off link RD, ghaktopar-e, mumbai, 400075, india: medknow publications & media pvt ltd.
6. American Psychiatric Association Practice Guideline for Treatment of Patients with Schizophrenia Am J Psychiatry 2001; 154 :1-63
7. Atik L, Erdogan A, Karaahmet E, Saraclı O, Atasoy N, Kurcer MA, Balcioglu I. Antipsychotic prescriptions in a university hospital outpatient population in Turkey: A retrospective database analysis, 2005–2006. Progress in Neuro-Psychopharmacology and Biological Psychiatry. 2008 May 15; 32(4):968-74.
8. Weinbrenner S, Assion HJ, Stargardt T. Drug prescribing Pattern in Schizophrenia Outpatients: Analysis of Data from a German Health Care Fund, Pharmacopsychiatry. 2008; 41: 1-6.
9. WHO Expert Committee the Selection of Essential Drugs. Technical Report Series no 615, Geneva: World Health Organization, 1977.
10. Lunde Pk, Baksaas I. Epidemiology of drug utilisation basic concepts of methodology, Acta Med Scand Suppl. 1998; 721: 7-11.
11. Age link MW, Kavuk I, Ak I. Clozapine with amisulpride for refractory schizophrenia. American Journal of Psychiatry. 2004 May 1; 161(5):924-a.
12. Alessi-Severini S, Biscontri RG, Collins DM, Kozyrskyj A, Sareen J, Enns MW. Utilization and costs of antipsychotic agents: a Canadian population-based study, 1996–2006. Psychiatric Services. 2008 May; 59(5):547-53.
13. Pise ND, Patel SS. Pharmacoeconomic study of single and multiple antimicrobial agents prescribed in rural hospital central India. JMIMSU, 2012;4:234-242.
14. Girish K, Murthy P, Issac MK. Drug treatment in schizophrenia: Issues of comparability and costs. Indian journal of psychiatry. 1999 Apr; 41(2):100.
15. Consumer Report Health. Org/Best Buy Drugs 2, Aug 2009.
16. Antonio J, Garcia-Ruiz et al. Health Economic Review 2012; 2: 8.
17. Gupta RK, Reddy PS. A calm look on cost analysis of different brands of anti-epileptic drug. J MGIMS. 2011; 16(1):64-6.
18. Lehman AF, Lieberman JA, Dixon LB, McGlashan TH, Miller AL, Perkins DO, Kreyenbuhl J, McIntyre JS, Charles SC, Altshuler K, Cook I. Practice guideline for the treatment of partients with schizophrenia. American Journal of psychiatry. 2004; 161(2 SUPPL.).
19. Indian Drug Review. 2013; 4: 91-95.
20. Current Index of Medical Specalities Jan- March 2016, Apr- Jun 2016, July- Sep 2016.
21. Sharma HL, Sharm KK, Principles of Pharmacology, 2nd edition, Hyderabad: Paras; 2011: 451-461.
22. Awasthi A, Agarwal M, Grover S Khan MKR. Reaseach on Antipsychotics in India...Ind J Psychiatry 2010; 52 suppl 3:17-40.