

Prescription audit and drug utilization pattern in outpatients of psychiatry department of tertiary care teaching hospital: an observational study

Angelika Batta¹, Pushpawati Jain², Bhupinder Kalra^{1*}

¹Department of Pharmacology, Maulana Azad Medical College, Delhi 110002, India

²Department of Pharmacology, Mahatma Gandhi Medical College & Hospital, Jaipur 302022, Rajasthan, India

Received: 19 November 2018

Accepted: 28 December 2018

***Correspondence to:**

Dr. Bhupinder Kalra,

Email: drbskalra@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The domain of psychiatric illnesses is grossly underrepresented in the current health care scenario especially due to overreliance on mortality rather than the morbidity or dysfunction. The field of psycho-pharmacology is witnessing constant development and introduction of new drugs for which holistic utilization, effectiveness, and side effects studies are the need of the hour. In addition, inappropriate use of drugs poses a potential hazard to patients. Our current study aims at studying the morbidity pattern of various psychiatric ailments and focuses on the prescribing trends of psychotropic drugs.

Methods: A prospective observational study was conducted in psychiatry outpatient department of a tertiary care hospital for a period of 12 months. Prescription pattern of psychotropic drugs was analyzed using predesigned format. Prescriptions were collected from OPD and hospital pharmacy. Prescriptions were analysed as per WHO indicators for prescriptions. Descriptive statistics were used for analysis.

Results: Depression was found to be the most common psychiatric disorder encountered (32.6%). Average number of psychotropic drugs prescribed per patient 2.45 ± 1.013 . Antidepressants along with BZD were the most frequently prescribed psychotropic drugs in various psychiatric disorders. Among the total of 2445 psychotropic drugs prescribed, 99.98% were oral formulations. Psychotropic fixed dose combinations were present in 1.68% of the prescriptions. Only 28% of medicines were prescribed by generic names. Utilization of drugs from the WHO's 18th list of essential medicines of India was 29%. PDD of risperidone was 1.57mg in schizophrenia. Escitalopram, risperidone and propranolol were the most commonly prescribed drugs for mood disorders, schizophrenia and anxiety respectively.

Conclusions: The concomitant use of two psychotropic drugs was the preferred therapy. FDC of anti-cholinergics with both typical and atypical antipsychotics were used. Benzodiazepines were significant part of therapy.

Keywords: Prescription Pattern, Polypharmacy, Psychotropic drugs

INTRODUCTION

To ascertain the role of drugs in the society, drug utilization studies have been very crucial. They provide a sound socio-medical and health economic basis for health care decision making. Irrational use of drugs may lead to increased cost of treatment, drug resistance, adverse effects and patient mortality.¹ Therefore the need for

elaborate drug utilization studies has become all the more critical in view of evaluating the current health care systems.² Prescription pattern monitoring can identify the pitfalls and provide feedback to prescribers so as to create awareness about inappropriate use of drugs.³

Psychiatric disorders form an important public health priority.^{4,5} Of the top ten health conditions contributing to

the Disability Adjusted Life Years (DALYs), four are psychiatric disorders.⁵ Mental illness is associated with high levels of health service utilization and associated costs, and in developing countries these costs are mostly paid by the patient.⁶

Although psychotropic medications have had a significant impact in psychiatric disorders that reasonably can be called revolutionary, their utilization and consequences on real life effectiveness and safety in actual clinical practice need repeated monitoring.⁷ Novel agents for psychiatric disorders are also continuously emerging in the pharmaceutical markets which claim to be safe and efficacious; their safety needs to be established.

The Out-patient department (OPD) of psychiatry is the one of the ideal venues for screening and assessing morbidity in patients. The generated data and recommendations can be utilized in future for promotion of rational use of drugs.

METHODS

This observational study was conducted in psychiatry outpatient Department of Mahatma Gandhi Medical College and Hospital, Jaipur after the approval from the Institutional Ethics Committee. The study was conducted over a period of 12 months. A total of 1000 patients were enrolled in the study as per the inclusion criteria. Written and verbal informed consent was taken from all the patients.

Inclusion criteria

- Old and new psychiatric patients attending the Psychiatry OPD during the study period.
- Patients from all age groups and both sexes were included.

Exclusion criteria

- Patients with history of concomitant illness like diabetes, thyroid disorder, cardiac disease, liver and renal, neurological disorder and immune-compromised on clinical parameters.
- Pregnant and lactating women.
- In patients of psychiatry department
- Hypersensitivity reactions to psychotropic drugs.

Following details were recorded from each prescription:

(1) Patient's demographic details; (2) details about patient's disease; (3) concomitant illness; and (4) treatment details.

To study the prescription pattern, following prescribing indicators were used: (1) Percentage (%) of drugs prescribed by generic name; (2) average number of drugs per encounter; (3) percentage of drugs with injections prescribed; (4) average number of combinations prescribed; (5) percentage (%) of drugs prescribed from

the WHO 18th List of Essential Medicines; (6) Prescribed Daily Dose (PDD) of drugs prescribed using the following formula:⁸

$$\text{PDD} = \frac{\text{Quantity of drug dispensed} \times \text{Strength of drug}}{\text{Number of cases prescribed}}$$

The data was analyzed as per the WHO core drug use indicators.

Statistical analysis

The data was collated in MS excel and descriptive statistics were used for analysis and presentations.

RESULTS

One thousand patients with various psychiatric ailments were enrolled in the study. Among the 1000 patients, 362 (36.2%) were females and 638 (63.8%) were males. Majority of the study subjects were found to be belonging to the age group 21-40 years (58%) (n=581). Depression was the most common disorder encountered (32.6%), followed by anxiety (27.2%), bipolar mood disorder (14.4%) and personality disorders (11.3%). The demographic details and disease-related information have been represented in Tables 1 and 2.

Table 1: Demographic details.

Number of patients (n)	1000 (%)
Male (%)	638 (63.8)
Female (%)	362 (36.2)
Age groups n (%)	
0-20	163 (16)
21-40	581 (58)
41- 60	216 (22)
>60	39 (4)
Marital Status	
Single	250 (25)
Married	119 (12)
Others (widow, remarried, separated, divorced)	631 (63)

Prescription analysis

A total of 1000 prescriptions containing 3525 drugs were analyzed. Out of these, 2445 were psychotropic drugs. Average number of the psychotropic drugs per prescription was 2.45±1.013. Percentage of prescriptions with injectable drugs accounted for 0.12%. Approximately 28% of the drugs were prescribed by generic name (Table 3). 29% of the drugs were from the WHO's 18th List of Essential Medicines. Number of drugs prescribed per patient was 3.39±1.22.

Among the various psychotropic drugs prescribed, antidepressants constituted 19%, and frequency of sedative-hypnotics was 17%, thus being the most

commonly prescribed categories. The other drugs prescribed were antipsychotics (13%), anti-anxiety agents (11%) and anticonvulsants (10%).

Table 2: Morbidity pattern and sex differences among different psychiatric illnesses.

Diagnosis	Males (%)	Females (%)	Total (%)
Anxiety	182 (67)	90 (33)	272 (27.2)
Depression	199 (61)	127 (39)	326 (32.6)
Bipolar disorder	90 (62.5)	54 (37.5)	144 (14.4)
Alcohol withdrawal	17 (100)	0 (0)	17 (1.7)
Somatoform disorder	7 (46.6)	8 (53.3)	15 (1.5)
Personality disorder	70 (61.9)	43 (38)	113 (11.3)
Sleep disorder	18 (64.28)	10 (35.7)	28 (2.8)
Schizophrenia	55 (64.7)	30 (35.29)	85 (8.5)

Miscellaneous category of drugs included antihypertensives and antithyroid drugs (13%). Other drugs

commonly co-prescribed were antacids (7%) calcium lactate, multivitamins and iron and zinc preparations (Table 4).

Table 3: Analysis of prescriptions as per WHO core drug use indicators.

Prescribing indicators	Results
1 Average number of drugs per prescription: (Mean±SD)	3.39±1.22
2 Average number of psychotropic drugs per prescription: (Mean±SD)	2.45±1.013
3 Percentage of prescriptions containing psychotropic FDCs	1.68%
4 Percentage of drugs prescribed by generic name	28%
5 Percentage of prescription with an injection prescribed	0.12%
6 Percentage of drugs prescribed from EDL	29%
Facility indicators	
1) Availability of copy of essential drug list/ formulary	yes
2) Availability of key drugs	yes

Table 4: List of psychotropic drugs prescribed in different psychiatric illnesses.

Drug groups	Schizophrenia% (n= 288)	Depression% (n= 1214)	Bipolar affective Disorder% (n= 448)	Anxiety% (n= 878)
Anti-anxiety	44 (15%)	51 (4%)	84 (19%)	347 (40%)
Antipsychotics	116 (40%)	243 (20%)	98 (22%)	140 (16%)
Antidepressants	25 (8%)	407 (34%)	116 (26%)	256 (29%)
Anticholinergic drugs	18 (6%)	69 (6%)	6 (1%)	24 (3%)
Mood stabilizers	8 (3%)	126 (10%)	73 (16%)	48 (5%)
Other drugs	77 (28%)	318 (26%)	71 (16%)	63 (7%)

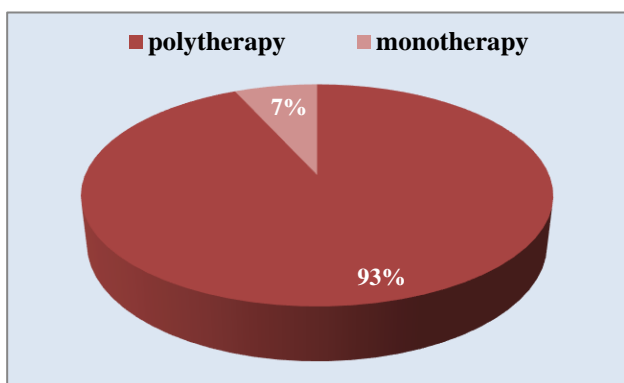


Figure 1: Prescribing pattern showing the practice of monotherapy and polytherapy.

Total number of drugs prescribed per patient was 3 (in 322 patients), 4 (in 270 patients), and more than 6 drugs (in 40

patients). The duration of treatment was studied; 383 patients were on treatment for 2 weeks, followed by 356 for 1 month, and 51 for more than 1 month. Monotherapy was practiced among 7% (n=68) while polypharmacy was practiced among 93% (n = 932) of the study population (Figure 1).

A total of 107 FDCs were used. Table 5 shows various fixed dose combinations (FDC's) of psychotropic drugs prescribed. Total of 223 patients received the combination regimes. The combination of antipsychotic and central anticholinergic was most frequently used. The other combinations were of Tricyclic antidepressants and benzodiazepines.

Table 6 shows the Prescribed daily dose (PDD) of drugs prescribed. In schizophrenia, PDD of risperidone was 1.57mg and that of lorazepam was 1.285mg. PDD of

fluoxetine was 64.285mg and escitalopram was 10.34mg in major depression.

Table 5: List of fixed -dose combinations prescribed.

Brand name	Generic name
Etilam-S	Etizolam 0.5mg + Escitalopram 5mg
Neocalm plus	Trifluoperazine (5mg) + Trihexyphenidyl (2mg)
Betacap plus	Propranolol 40mg + Flunarizine 10mg
Sizodon -LS	Risperidone 2mg + Trihexyphenidyl 2mg
Maxgalin- M	Pregabalin 75mg + Mecobalamine 0.75mg
Nexito-LS	Escitalopram 10mg + Clonazepam 0.25mg
Oleanz Plus	Olanzapine 5mg + Fluoxetine 20mg
Depsonil DZ	Imipramine 25mg + Diazepam 2mg
Parogen-CR	Paroxetine 12.5mg + Clonazepam 0.25mg

Table 6: Prescribed daily dose / person / day of the most frequent prescribed drugs.

Diseases	PDD
Schizophrenia	
Risperidone	157mg
lorazepam	1.285mg
Trifluoperazine	5.172mg
Major depression	
Fluoxetine	64.285mg
Escitalopram	10.34mg
Sertaline	47.61mg
lorazepam	0.91mg
Bipolar mood disorder	
Lithium	685.71mg
Sodium valproate	294.11mg

Out of 470 prescriptions of Mood disorders, the maximum prescribed drug was Escitalopram (19%) followed by sodium valproate (16%) and duloxetine (14%), in 213 patients of Schizophrenia and other psychoses, Risperidone (15%) was the highly prescribed drug closely followed by quetiapine (14%) and olanzapine (13%) and in 272 patients of Anxiety disorders, Propranolol (19%) was at the top followed by escitalopram (14%) and others (16%).

DISCUSSION

The findings of the prescription pattern study conducted in a Tertiary Care Hospital, Jaipur, provide information about the demographic data and prescribing patterns. Majority of the patients were males, and the age of onset was middle age. This finding is similar to the studies done in past.^{9,10} Male members have a higher help seeking behavior as mostly they are economically productive and, at times, the

sole bread winners of the family. The age group of 21-40 years was found to be represented with maximum psychiatric disorders. This may be due to increased incidence of mental ill health, improved mental health literacy in general population, reduced stigma associated with mental illness, increase in drug treatment option and due to more vigorous marketing of such medications.¹¹ It also highlights the fact that psychological disorder tends to affect economically productive sections of our society.

Depression was the most common illness encountered followed by anxiety, bipolar disorder, personality disorders, and schizophrenia respectively. Here, we found that anti-depressant drugs are the most commonly prescribed categories, followed by sedative- hypnotics, anti-psychotics, anti-anxiety agents, and anti-convulsants in decreasing order. Benzodiazepines are remarkably useful and efficacious in a wide range of conditions for short term or intermittent use.¹²

In this study, the average number of psychotropic drugs per prescription was found to be 2.45. Psychiatric polypharmacy refers to the concurrent prescription of two or more psychiatric medications (of the same chemical class or same pharmacologic actions) to treat the same condition.¹³ Number of drugs prescribed per patient was 3.39 approximately. It has been recommended that the limit of number of drugs prescribed per prescription should be two and that justification for prescribing more than two drugs would be required because of the increased risk of drug interactions.¹⁴ The increase in the number of drugs per se also increases the cost of prescription and patients may not purchase or take the prescribed drugs. This nonadherence to the therapy can deteriorate the said condition, prolonging the treatment duration. The present study observed that only 28% drugs were prescribed by their generic name. However, approximately 29% of the drugs were prescribed from the WHO Essential Medicine List. This is a relatively fewer in number.

Approximately 99% of patients were given oral preparations. The only injection prescribed was haloperidol decanoate 50mg/ml once a month, intramuscularly; it was helpful in cases of poor compliance and failure with oral preparations.

Trifluoperazine plus trihexyphenidyl hydrochloride was the most common FDC prescribed. Prescription of anti-cholinergics with both typical and atypical antipsychotics is very common to prevent extra-pyramidal side-effects (EPS).

Tricyclic Antidepressants (TCAs) were the antidepressants of choice by the prescribing psychiatrist followed by Selective Serotonin Reuptake Inhibitors (SSRI). This finding matches with the other studies.^{15,10} This is in contrast to existing guidelines advocating SSRI as first line of therapy. Also, more than half of the patients received adjunctive BZD, which is similar to other studies.^{16,17} Clonazepam (51.83%) being the most

common followed by lorazepam (32.32%), suggesting a trend toward the use of shorter acting BZD as continuous and prolonged use of longer acting BZDs has resulted in dependence and may have withdrawal symptoms when the dose of the drug is reduced or stopped.¹⁸ Guidelines for the rational use of BZDs recommend their use for short-term (maximum 4 weeks) or intermittent courses in minimum effective doses, to be prescribed only when symptoms are severe.¹⁹

In bipolar mood disorders, escitalopram was most commonly prescribed followed by valproate and divalproex. Most of the patients received atypical antipsychotics in depression. Risperidone (10%) was the most common antipsychotic drug prescribed followed by, Olanzapine (9%). Similar trend is seen in other studies.^{16,12,20} Atypical antipsychotics are commonly prescribed, owing to their better tolerability, low relapse rate, efficacy against refractory cases, better control over negative symptoms and safer adverse event profile.²¹ Propranolol was the most commonly prescribed drug for anxiety disorders, followed by Escitalopram, fluvoxamine. In schizophrenia, although prescribing frequency of atypical antipsychotic was higher than the typical one, anticholinergic agents were prescribed in the majority of patients. European pharmacoepidemiological study carried out also observed that anticholinergics were co-administered with atypical antipsychotic drug in schizophrenia.²²

PDD of risperidone for schizophrenia was 1.57mg. Extra pyramidal side-effects are commonly seen with doses of risperidone higher than 6mg per day. Use of anticholinergic agents in all cases who received risperidone is thus not justified. Use of anticholinergic drugs should be restricted only to the cases where higher dose of risperidone is needed.

This study was a preliminary study to understand pattern of drugs in various Psychiatric ailments, hence we did not touch upon adverse drug reactions, cost of therapy, compliance and adherence to guidelines.

CONCLUSION

The drug use pattern in various psychiatric ailments was found to be primarily based on antidepressant and antipsychotic drugs. The concomitant use of two psychotropic drugs was the preferred therapy. FDC of anticholinergics with both typical and atypical antipsychotics to prevent extra-pyramidal side-effects was practiced. Significant fraction of drugs prescribed was for prevention of ADRs. A trend of polypharmacy was noted in the study with benzodiazepines being significant part of therapy.

Funding: No funding sources

Conflict of interest: None declared

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

REFERENCES

1. Einarsen T. Pharmacoepidemiology. A Text book of Clinical Pharmacy Practice essential concepts and skills. 1st ed., Hyderabad: Universities Press (India) Limited; 2008:405-423.
2. Laporte JR, Porta M, Capella DO. Drug utilization studies: a tool for determining the effectiveness of drug use. *Brit J Clin Pharmacol.* 1983 Sep 1;16(3):301-4.
3. Pradhan SC, Shewade DG, Tekur U, Zutshi S, Pachiappan D, Dey AK, et al. Changing pattern of antimicrobial utilization in an Indian teaching hospital. *Int J Clin Pharmacol Thera Toxicol.* 1990 Aug;28(8):339-43.
4. World Health Organization. The World Health Report 2001: Mental health: new understanding, new hope. World Health Organization; 2001.
5. Thakkar KB, Jain MM, Billa G, Joshi A, Khobragade AA. A drug utilization study of psychotropic drugs prescribed in the psychiatry outpatient department of a tertiary care hospital. *J Clin Diag Res. JCDR.* 2013 Dec;7(12):2759.
6. Sharma P, Das SK, Deshpande SN. An estimate of the monthly cost of two major mental disorders in an Indian metropolis. *Ind J Psychi.* 2006 Jul;48(3):143.
7. Baldessarini RJ. Drug therapy of depression and anxiety disorders. Goodman and Gilman's The Pharmacological Basis of Therapeutics. Edited by Brunton LL, Lazo JS, Parker KL. New York, McGraw-Hill; 2006:429-460.
8. Piparva KG, Parmar DM, Singh AP, Gajera MV, Trivedi HR. Drug utilization study of psychotropic drugs in outdoor patients in a teaching hospital. *Ind J Psychol Med.* 2011 Jan;33(1):54.
9. Stratton CW, Ratner H, Johnston PE, Schaffner W. Focused microbiological surveillance by specific hospital unit as a sensitive means of defining antimicrobial resistance problems. *Diagnostic Microbiology and Infectious Disease.* 1992 Feb 1;15(2):2-3.
10. Tabish A. Drug utilization pattern in psychiatry outdoor patients at tertiary care teaching hospital of Bastar region. *IJPR.* 2015;5(4):98.
11. Jorm AF, Christensen H, Griffiths KM. Changes in depression awareness and attitudes in Australia: the impact of beyondblue: the national depression initiative. *Aust New Zeal J Psych.* 2006 Jan;40(1):42-6.
12. Shaktibala D, Atif BM, Vijay K, Srihari D. Psychotropic drug utilization study in psychiatric OPD of a tertiary care teaching hospital in Dehradun, Uttarakhand. *J Adv Rese Biologi Scie.* 2013;5(4):386-91.
13. Kukreja S, Kalra G, Shah N, Shrivastava A. Polypharmacy in psychiatry: a review. *Mens Sana Monographs.* 2013 Jan;11(1):82.
14. Gopalakrishnan S, Ganeshkumar P, Katta A. Assessment of prescribing practices among urban and

- rural general practitioners in Tamil Nadu. *Indian J Pharmacol.* 2013 May;45(3):252.
15. Moore S, Jaime LK, Maharajh H, Ramtahal I, Reid S, Ramsewak FS, et al. The prescribing of psychotropic drugs in mental health services in Trinidad. *Revista Panamericana de Salud Pública.* 2002;12:207-14.
 16. Grover S, Kumar V, Avasthi A, Kulhara P. An audit of first prescription of new patients attending a psychiatry walk-in-clinic in north India. *Ind J Pharmacol.* 2012 May;44(3):319.
 17. Trivedi J, Dhyani M, Yadav V, Rai S. Anti-psychotic drug prescription pattern for schizophrenia: Observation from a general hospital psychiatry unit. *Ind J Psychia.* 2010 Jul 1;52(3):279.
 18. Lader MH, Bond AJ, James DC. Clinical comparison of anxiolytic drug therapy. *Psychological medicine.* 1974 Nov;4(4):381-7.
 19. Ashton H. Guidelines for the rational use of benzodiazepines. *Drugs.* 1994 Jul 1;48(1):25-40.
 20. Kamath A, Bheemesh V, Reddy S, Thunga R. Psychotropic drug utilization in psychiatry inpatients in a tertiary healthcare setting. *Int J Med Pharmac Scien.* 2012;3(4):16-22.
 21. Dhasmana DC, Rawat Y, Mishra KC. What is so atypical about atypical antipsychotics!. *Ind J Pharmacol.* 2003 Sep 1;35(5):322.
 22. Broekema WJ, de Groot IW, van Harten PN. Simultaneous prescribing of atypical antipsychotics, conventional antipsychotics and anticholinergics-a European study. *Pharm World Sci.* 2007;29(3):126-30.

Cite this article as: Batta A, Jain P, Kalra B. Prescription audit and drug utilization pattern in outpatients of psychiatry department of tertiary care teaching hospital: an observational study. *Int J Basic Clin Pharmacol* 2019;8:222-7.