

Original research article

A DRUG UTILIZATION STUDY IN THE DEPARTMENT OF PSYCHIATRY IN TERTIARY CARE HOSPITAL

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Abstract

Assessment of Drug Utilization pattern is an insight in the rationality of prescribing. Accordingly, the present study envisages the examination of the prescribing pattern, extent, and frequency of psychotropic drug use in psychiatric illnesses in a tertiary teaching hospital with reference to DSM-5 and APA guidelines. Relevant data collected prospectively from 320 patients from the outpatient department of psychiatry, in tertiary teaching hospital, over a period of 18 months, in a especially designed performa with emphasis on the data such as demographic, disease and drugs given and advrse drug reactions. Most common drug prescribed was Risperidone (45.3%) followed by Clonazepam (33.1%). The most common group of drugs used in order wise was Antipsychotics (64.7%), Antidepressants (42.8%), Anti cholinergic (36.9%), Anti-Anxiety (31.9%), Mood stabilizers (15.3%). Polypharmacy was avoided in our study.

Keywords: Psychiatric disorders, psychiatric rating scales, psychopharmacology, psychotropic drugs, anti-psychotic drugs, anti-depressant drugs, anticholinergic drugs, mood stabilizers

Introduction

Psychiatry is a branch of medicine that deals with mental, emotional or behavioural disorders. Psychiatric disorders are central nervous system diseases characterized by disturbances in emotion, cognition, motivation and socialization. They are highly heritable, with genetic risk comprising 20-90% of disease vulnerability ^[1].

As a result of their prevalence, early onset, and persistence, they contribute substantially to the burden of illness worldwide. All psychiatric disorders are broad heterogeneous syndromes that currently lack well-defined neuropathology and bona fide biologic markers. Therefore, diagnoses continue to be made solely from clinical

observations using criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), of the American Psychiatric Association (APA) [2].

Pharmacotherapy, psychotherapy and psychosocial rehabilitation are the three components in the management of these disorders. Pharmacotherapy forms a significant part of the comprehensive treatment of these illnesses. Antipsychotics, antidepressants, mood stabilizers and sedative-hypnotics are the main psychotropic drugs targeting the symptoms of the mental and behavioral disorders [3].

The pattern of their usage in psychiatric practice has undergone a dramatic change in the recent years. This can be attributed to the development of newer agents and a broader range of indications. There is very minimal data on drug utilization of psychotropic medicines particularly in Indian context. Knowledge of pattern of utilization of drugs in the general population can be achieved through conduct of drug utilization studies (DUS) [4].

The burden of illness resulting from psychiatric and behavioral disorders is enormous; although, it remains grossly under represented by conventional public health statistics, which focus on mortality rather than the morbidity or dysfunction [5].

To improve the overall drug use, especially in developing countries, international agencies like World Health Organization (WHO) has recommended standard drug use indicators which help us to know the shortcomings in our prescription writing.

The World Health Organization (WHO) defines drug utilization study as the marketing, distribution, prescription and use of drugs in a society, considering its consequences, either medical, social and economic.

The findings from many of the epidemiological studies conducted in India estimated that around 20% of the adult population is affected from one or the other psychiatric disorders, which requires interventions from a mental health professional [6].

Methodology

Source of data

Hospital based observational study was conducted in psychiatry outpatient Department at Tertiary teaching hospital. Relevant data was collected personally by investigator.

Collection of data

After obtaining approval and clearance from the Institutional Ethical Committee, 320 cases were included for the present study. After obtaining the informed Consent from the patients/guardians, relevant data was recorded from patient's medical records and prescription orders. Patients were called for follow up at 1st month, 2nd, 3rd and 6th month.

Psychiatric disorders include number of diseases such as depression, schizophrenia, bipolar and mood disorders, anxiety etc. for any psychiatric disorder to be diagnosed minimum 2 weeks the symptoms should be present.

For the diagnosis and treatment of psychiatric disorders. ICD-10 management guidelines and DSM 5 guidelines were followed.

Inclusion criteria

1. Patients of all ages and either sex.
2. Whose diagnoses are certain.

3. Patients who are starts on at least one psychotropic drug.
4. Patient/guardian who are willing to give informed consent.

Exclusion criteria

1. In patients.
2. Patients who are pregnant and lactating.
3. Those cases in which diagnoses are not certain.
4. With substance abuse related disorders, Patients with epilepsy.
5. Patients who are critically ill.
6. Patients with co morbid conditions like CHD and HIV positive etc.
7. Patients who do not come for follow up.

Study sample size: 320.

Results

Table 1: Showing mean drugs per prescription and mean psychotropic drugs per prescription

Total number of drugs prescribed	Frequency	Percentage
<2	99	30.9
≥2	221	69.1
P value: 0.000		
Total number of psychotropic drugs prescribed	Frequency	Percentage
<2	177	55.3
≥2	143	44.7
P value: 0.000		

In our study, there is a strong association between the use of drugs and psychiatric illnesses.

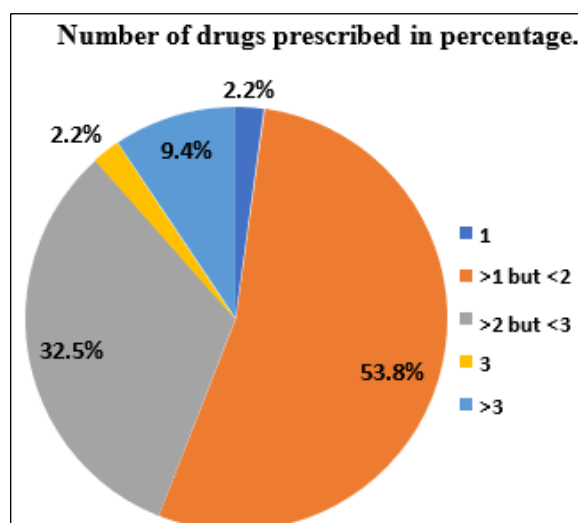


Fig 1: Pie chart showing number of drugs prescribed from 1 to >3. 2.2% of population

were prescribed 1 drug, while 53.8%, 32.5%, 2.2%, and 9.4% of the population were prescribed >1 to < 2, >2 to <3, 3 and >3 number of drugs respectively

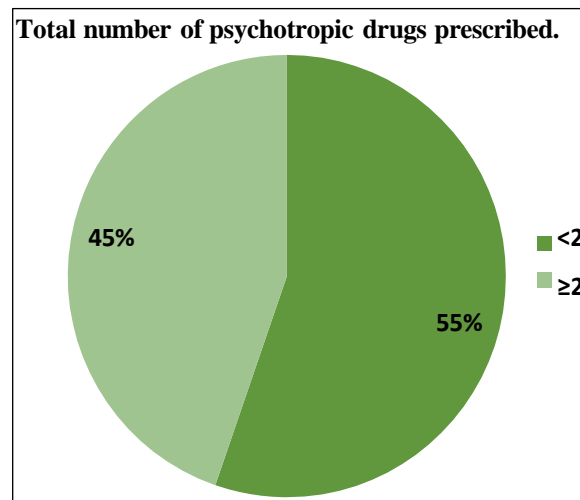


Fig 2: Showing percentage of psychotropic drugs used among total prescription. <2 drugs used in 55% prescription and > or = to 2 drugs in 45% prescription

Table 2: Showing group of drug used with frequency and percentage

Group of Drugs	Frequency	Percentage	P value
Antidepressants	137	42.8	0.000
Antipsychotics	207	64.7	0.000
Mood Stabilizers	49	15.3	0.000
Anti-Anxiety	102	31.9	0.000
Anti-cholinergic	118	36.9	0.000
Miscellaneous (multivitamin, iron folic acid, calcium supplements, laxatives, antimicrobial)	17	5.3	0.007

Most common group of drug used was antipsychotics (64.7%), followed by anti-depressant (42.8%).

Table 3: Use of Drugs Alone and in combination

Drug	Used Alone Frequency (percentage)	Used in Combination Frequency (percentage)
Risperidone	0	143 (44.7)
Trihexphenidyl	0	142 (44.4)
Clonazepam	0	117 (36.6)
Olanzapine	1 (0.3)	114 (35.6)
Escitalopram	2 (0.6)	98 (30.6)
Sodium	0	56 (17.5)

valproate		
Fluoxetine	1 (0.3)	63 (19.7)
Amitriptyline	1 (0.3)	74 (23.1)
Alprazolam	2 (0.6)	0
Multivitamin	0	18 (5.6)
Iron folic acid	0	6 (1.9)
Chlorpromazine	0	7 (2.2)
Sertaline	0	9 (2.8)
Bupropion	0	1 (0.3)
Lithium	0	4 (1.3)
Haloperidol	0	6 (1.9)
Antacids	0	10(3.1)
Laxatives	0	10(3.1)

In our study most of the drugs were used in combination. Most common drugs used in combination were Risperidone (44.7%), Trihexphenidyl (44.4%), clonazepam (36.6%) and Olanzapine (35.6%). Drugs used singly were Escitalopram (0.6%), Alprazolam (0.6%), Fluoxetine, Amitriptyline, and Olanzapine, all (0.3%) each.

Table 4: Frequency and percentage of individual drug use

Drugs	Frequency	Percentage	P value
Amitriptyline	72	22.5	0.000
Alprazolam	2	0.6	0.000
Bupropion	1	0.3	-
Clonazepam	106	33.1	0.000
Chlorpromazine	5	1.6	0.56
Escitalopram	101	31.6	0.000
Fluoxetine	47	14.7	0.000
Haloperidol	2	0.6	0.998
Lithium	2	0.6	0.064
Olanzapine	90	28.1	0.000
Risperidone	145	45.3	0.000
Sertaline	1	0.3	0.998
Sodium valproate	48	15	0.000
Trihexphenidyl (anti-cholinergic)	112	35	0.000

Among the individual psychotropic drug used most commonly used drug was found to be Risperidone (45.3%), followed by Clonazepam (33.1%), Escitalopram (31.6%), Olanzapine (28.1%), Amitriptyline (22.5%), Sodium valproate (15%), Fluoxetine (14.7%), Chlorpromazine (1.6%), Alprazolam, Haloperidol, Lithium (0.6%) each. Bupropion, Sertaline (0.3%) each. Trihexphenidyl is used (35%).

Table 5: Number of injectables used

Injectables	Frequency	Percentage
None	304	95
Diazepam	7	2.2
Multivitamin	7	2.2
NSAIDss	2	0.6

In our study the use of injectables was very less with inj. Diazepam only 2.2% of the time followed by inj. Multivitamin as an add on therapy (2.2%), followed by NSAIDs (0.6%).

Discussion

In our study all drugs were supplied from the drug formulary of tertiary teaching hospital and all drugs were supplied by their generic name. This was in accordance with the study conducted by Karak *et al.* ^[7], where all the drugs were prescribed by their generic name.

In our study all the patients were prescribed the drugs with oral route of administration with only 5% of the patients were given injections (intra muscular). Diazepam is used through intramuscular route in only 2.2% of the patients along with oral drugs.

Average number of Total drug prescribed was 2.15 ± 0.59 (Mean \pm SD) whereas average number of psychotropic drug prescribed were 1.81 ± 0.61 (Mean \pm SD). This was in accordance to the study conducted by Thakkar *et al.* ^[2], where average number of psychotropic drugs per prescription was 1.79. Since no prescription had more than 4 drugs, we can say that polypharmacy was avoided.

All the drugs were the prescribed from National List of Essential Medicine, 2015.

Most common group of drugs prescribed were antipsychotics (n=270, 64.7%), in which Atypical antipsychotic Risperidone is used (n=145, 45.3%) followed by Olanzapine (n=90, 28.1%), this was in accordance to the study conducted by Sabu *et al.* ^[8], where Risperidone was used (42.5%) followed by Olanzapine (23.33%). The preference maybe attributed to fact that atypical antipsychotics are available since a long time in the market hence the wide knowledge about their indications and dose ranges in the literature may make psychiatrists more comfortable in prescribing these drugs.

Atypical antipsychotics have better tolerability, low relapse rate, efficacy against refractory cases.

The second most common group prescribed was Antidepressants (n=137, 42.8%), SSRI Escitalopram was most prescribed drug (n=101, 31.6%) followed by TCA.

Amitriptyline (n=72, 14.7%). This was in accordance to the study conducted by Rode SB *et al.*, ^[9] where Escitalopram was most commonly prescribed drug (39.2%) followed by Amitriptyline (24%). This was also similar to the studies conducted by Zito JM *et al.* ^[10] and McVoy *et al.* ^[11], where SSRIs was more prescribed followed by TCA.

SSRIs are generally free of side effects and safer at higher doses.

Benzodiazepines were used Anxiolytics, in psychosis and in cases of psychosis and depression. Most commonly used drug was Clonazepam (33.1%). This was in accordance to the study conducted by Perumal VM *et al.* ^[12] and IPS multicentric study

on prescriptions conducted by Grover *et al.* ^[13], where Clonazepam was most commonly prescribed Benzodiazepine, in Chandigarh. Clonazepam (51.1%) was the single most commonly prescribed drug in study conducted by S Chawla *et al.* ^[14]. It was also observed in a drug utilization study of psychotropic drugs in Nagpur by Deshmukh and Ismail ^[15] possibly because of its potential to act as a psychotherapeutic adjunct in different psychiatric conditions.

Mood stabilizers (n=49, 15.3%), most commonly used for BPAD, was Sodium Valproate (n=48, 15%). This was in accordance to the study of prescription pattern in bipolar disorders in US by Baldessarini *et al.* ^[16] and S Chawla *et al.* ^[14] where Sodium valproate was used more commonly for BPAD followed by Lithium.

Anticholinergic drug Trihexphenidyl (n=112, 35%) in 51.7% cases of psychosis followed by 25.4% of schizophrenia. It was similar to the study conducted by Doshi CM *et al.* ^[17], where use of central anticholinergic Trihexphenidyl was high. As it is accounting higher prescribing frequency means that it is prescribed with all antipsychotics whether these were typical or atypical. It was noted that the addition of anticholinergic medication can exacerbate existing tardive dyskinesia and that discontinuing anticholinergic drugs may improve the condition ^[18].

Conclusion

- Atypical antipsychotics were most commonly prescribed, along with that anticholinergic drugs were concurrently prescribed, followed by SSRIs, Benzodiazepine and mood stabilizers.
- Most common group Anti-psychotic was Risperidone and most common antidepressant was Escitalopram. Benzodiazepine Clonazepam was used most commonly.

References

1. Math SB, Chandrashekar CR, Bhugra D. psychiatric epidemiology in India. The Indian Journal of Medical Research. Nov:126(3):183-92.
2. Thakkar KB, Jain MM, Billa G, Joshi A, Khobragade AA. A drug utilization study of psychotropic drug prescribed in the psychiatric OPD of tertiary care hospital. J Clin Diag Res. 2013 Dec;7(12):2759-2764.
3. Reddy BV, Gupta A, Lohiya A, Kharya P. Mental health issues and challenges in India: A review. Int J Sci Res Publ. 2013;3:1-3.
4. Baldessarini RJ, Tarazi FI. Pharmacotherapy of psychosis and mania. In: Hardman JG, Limbird LE, Gilman AG, editors. Goodman and Gilman's The Pharmacological basis of therapeutics. 11th ed. New York: McGraw-Hill, 2006, pp. 429-54.
5. Park K. Mental Health. In: Park's Textbook of Preventive and Social Medicine. 20th ed. Jabalpur: Banarsidas Bhanot Publishers, 2009, p. 734-41.
6. The ESEMeD/MHEDEA 2000 investigators. Psychotropic drug utilization in Europe: Results from the Europe Study of the Epidemiology of Mental Disorders (ESEMeD) project. [Last accessed on 2011 Feb 17]; Acta Psychiatr Scand. 2004;109:55-64.
7. Karak S, *et al.* Polypharmacy dominated prescribing pattern of antipsychotic drugs in a tertiary care hospital. WJPPS. 2016;5(6):1045-1055.
8. Sabu, *et al.* Drug utilization pattern of psychotropic drugs in psychiatric outpatient

- department in a tertiary care teaching hospital. *Asian J of Pharma Sciences*. 2017;10(1):1-3.
9. Rode SB, Ajagallay RK, Salankar HV, Sinha U. A study on drug prescribing pattern in psychiatry out-patient department from a tertiary care teaching hospital. *Int. J Basic Clin Pharmacol*. 2014;3:517-22.
 10. Zito JM, Safer DJ, Dosreis S, Gardener JF, Magder L, Soeken K, *et al*. psychotropic practice patterns for youth: A ten-year perspective. *Arch Pediatr Adolesc Med*. 2003;157(1):17-25.
 11. McVoy M, Findling R. Child and adolescent psychopharmacology update. *Psychiatr Clin North Am*. 2009;32(1);111-33.
 12. Perumal VM, Bouddh SK, Nirmal SR, Deshpande A, Singh J, Prabhu N. Drug utilization study and prescribing patterns in psychiatry patients at a tertiary care hospital. *Int. J Basic Clin Pharmacol*. 2018;7:774-7.
 13. Grover S, Avasthi A, Sinha V, Lakdawala B, Bathla M, Sethi S, *et al*. Indian Psychiatric Society multicentric study: Prescription patterns of psychotropics in India. *Indian J Psychiatry*. 2014;56:253-64.
 14. Chawla S, Agarwal M, Sharma S, Jiloha RC. Drug utilization of psychotropic drugs among Psychiatric outpatients in a tertiary care hospital. *Indian J Pharm Sci*. 2017;79(6):1008-1013.
 15. Deshmukh SA, Shaikh Ismail TSE. Evaluation of psychotropic drugs use pattern among outpatients attending psychiatry department at Government Medical College and Hospital, Nagpur: a cross sectional study. *Int. J Pharm Bio Sci*. 2012;3:428-36.
 16. Baldessarini RJ, Leahy L, Arcona S, Gause D, Zhang W, Hennen J. Patterns of psychotropic drug prescription for U.S. patients with diagnoses of bipolar disorders. *Psychiatr. Serv*. 2007;58:85-91.
 17. Doshi CM, Hedamba R, Darji NH, Patel B, Trivedi HR, Tiwari D. Drug utilization study of psychotropic drugs in outdoor patients in a tertiary care hospital attached with a medical college. *Int. J Basic Clin Pharmacol*. 2015;4:1220-3.
 18. Dhasmana DC, Rawat Y, Mishra KC. What is so atypical about atypical antipsychotic? *Indian J Pharmacol*. 2003;35:322-4.