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PRESCRIPTION PATTERN OF PSYCHOTROPIC DRUGS IN ADULT PATIENTS ATTENDING TO PSYCHIATRIC OUTPATIENT DEPARTMENT AT A TERTIARY CARE HOSPITAL IN MANDYA: A CROSS SECTIONAL STUDY

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ABSTRACT

Background: Psychotropic drugs are commonly preferred in psychiatric department to treat various illnesses. Drug prescribing type of studies helps to evaluate rational and cost-effective treatment. **Objectives:** To describe the drug prescription pattern of psychotropic drugs and common psychiatric polypharmacy in psychiatric outpatient department. **Methodology:** This is a prospective cross-sectional study was conducted for a period of 6 months in a psychiatric outpatient department. **Results:** Among 340 prescriptions higher incidence was found in males (53.82%). The majority of patients belong to the category of age 30-39 years (31.17%). Most of the patients suffered from psychosis (22.05%). Among 5 different classes of psychotropic drugs the commonly prescribed class of drug is antianxiety (31.53%). Totally 612 drugs were prescribed in 340 patients, clonazepam (14.54%) was the most commonly prescribed individual drug. Hypertension was the most common (3.23%) co morbid condition and other psychiatric drugs (3.23%) were commonly prescribed for comorbid condition. Most of the patients were prescribed with monotherapy 152 (44%). Oral route 97.86% was commonly preferred. **Conclusion:** Our study concludes that male patients are more visited to psychiatric outpatient department and age group 30-39. Among the patient's majority are suffering from psychosis disorder. Majority of patients were prescribed with anti-anxiety class of drugs and Clonazepam was most preferred individual drug among other psychotropic drugs. Commonly monotherapy was given to achieve the optimum therapeutic effect.

KEYBOARDS: Prescription pattern, Psychotropic drug, Outpatients.

INTRODUCTION

Psychiatric disorders are widely recognized as a major contributor to the global burden of disease. Pharmacotherapy, psychotherapy, and psychosocial rehabilitation are the three components in the management of psychiatric disorders. Pharmacotherapy forms a significant part of the comprehensive treatment of these illnesses.[1]

According to WHO "Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community.[2] A psychotropic drug is defined as a drug "capable of affecting the mind, emotions, and behavior; denoting drugs used in the treatment of psychiatric disorders".[3]

The National Institute of Family Welfare in India states that 2-3% of the population is suffering from serious debilitating mental disorders and about 10.4-53% visit general medicine outpatient department (OPD) with mental conditions.[4] The antipsychotics are indicated for treating schizophrenia, delusional disorder, and psychotic symptoms in mood disorders and for a number of organic psychoses.[5]

Psychiatrists introduced new drugs that are claimed to be safe and more efficacious. Introduction of newer drugs like selective serotonin reuptake inhibitors (SSRIs) and atypical anti psychiatric during the past two decades, have changed the drug prescribing habits in psychiatric departments.[6] Therapeutic practice is expected to be primarily based on evidence provided by pre–marketing clinical trials, but complementary data from the post–

marketing period are also paramount for improving drug therapy.[7]

Prescription patterns provides the extent and profile of drug use, trends, quality of drugs, and compliance with regional, national guidelines like standard treatment guidelines, usage of drugs from essential medicine list and use of generic drugs.[8] WHO estimates suggest that up to 5% of country's health expenditure can be saved with practice of rational prescribing, price control, and improving medicine quality.[9]

The rationality of prescribing pattern is gaining so much importance in the present days because, bad prescribing habits of medicines which ultimately pays the way for therapeutic failure, health hazards, economic burden on the patients, and wastage of resources, hospitalization.[10] In pharmacotherapy, psychotropic drugs remain a mainstay and some conditions of psychotropics treat includes Schizophrenia, Depression, Anxiety, Psychosis, Bipolar disorders and sleep disorders.

Among various psychiatric illnesses different class of psychotropic drugs will be prescribed. Sometimes single drug is not sufficient to get clinical outcomes and combination therapy is essential. Long term usage of these drugs leads to hypotension, diabetes and drug addiction. Rational use of drugs is essential to achieve the goal and minimize long term side effects. The aim of our study is to assess the drug prescription pattern of psychotropic drugs in psychiatric outpatient department.

OBJECTIVES
➢ To describe the prescription pattern of psychotropic drugs in psychiatric outpatient department.
➢ To assess the common psychiatric disorders and polypharmacy in psychiatric department.

METHODOLOGY
Study population: 340 outpatients.
Study design: This is a hospital based prospective cross-sectional study conducted on outpatient department to review the current prescribing pattern of psychotropic drugs in patients who were visited to psychiatric outpatient department.
Study period: 6 months (July 2022 to Dec 2022)
Study site: This study was conducted in MIMS teaching hospital, Mandya, Karnataka. It is a 500 bedded tertiary care hospital, providing specialized healthcare services to all strata of people in and around Mandya and also the rural population.
Study approval: Ethical clearance was obtained from the Institutional ethics committee at Mandya Institute of Medical Sciences, Mandya, Karnataka.

Sample size
$336 \cong 340$ patients
Formula $= 4pq/L^2$
(p=cumulative average of common psychiatric illness=30%, q=100-p, L= 5%)
Calculation: $4 \times 30(100-30)/5^2 = 336 \cong 340$
Sampling method: Convenience Sampling.

Inclusion criteria
➢ Both male and female patients more than 18 years of age.
➢ Patients suffering from a psychiatric illness and started on atleast one psychotropic drug were selected.
➢ Patients giving informed consent.

Exclusion criteria: Nil

Methods of data collection: The patients who were visited to psychiatric outpatient department. Data will be collected by using pre designed and semi structured profile form.
Following information will be collected
- Socio-demographic details like name, age, sex, educations.
- Description of psychotropic drugs prescribed for management and treatment of psychiatric disorder.
- Details on psychiatric illness.

Analysis of results: The data were subjected to descriptive statistical analysis using Microsoft Excel. Microsoft Word and Excel have been used to generate bar graphs, pie charts and tables.

RESULTS AND DISCUSSION
This study was conducted in the Psychiatric Outpatient department of MIMS Teaching Hospital, Mandya. A total of 340 patients who were visited in the psychiatric department were enrolled in our study based on inclusion and exclusion criteria. The required details from the patient prescriptions were recorded by using a suitably pre-designed patient profile form. A total of 340 prescriptions were analyzed in the current study.

Gender wise distribution of patients
A total of 340 patient's data were collected from Psychiatric outpatient department of MIMS Hospital during a period of 6 months. Among the whole 340 patients, 183 patients were male (53.80%) and 157 were female (46.17%). (Table1).
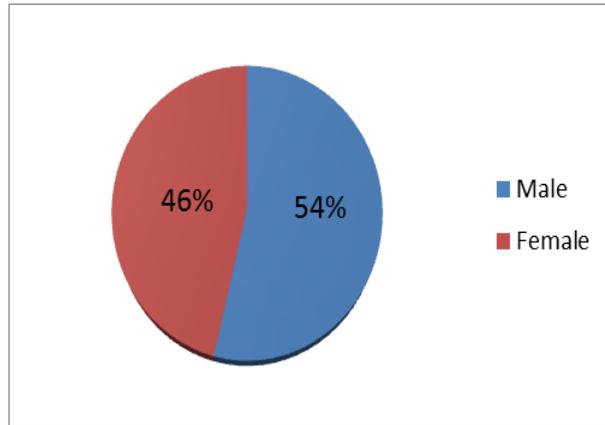
Table 1: Distribution of patients based on gender.

Gender	No. of patients	Percentage
Male	183	53.82 %
Female	157	46.18 %

Figure 1: Distribution of patients based on gender.

Age wise distribution of patients
Out of 340 patients, 106 patients were in the age group 30-39 (31.18%) are more visited in Psychiatric outpatient department followed by 82 patients of age group 40-49 (24.12%), 72 patients of age group 18-29 (21.18%), 40 patients of age group 50-59 (11.76%) and 40 patients of age group ≥60 (11.76%). (Table 2).

Table 2: Distribution of patients based on age.

Age in years	No. of patients	Percentage
18-29	72	21.18%
30-39	106	31.18%
40-49	82	24.12%
50-59	40	11.76%
≥60	40	11.76%
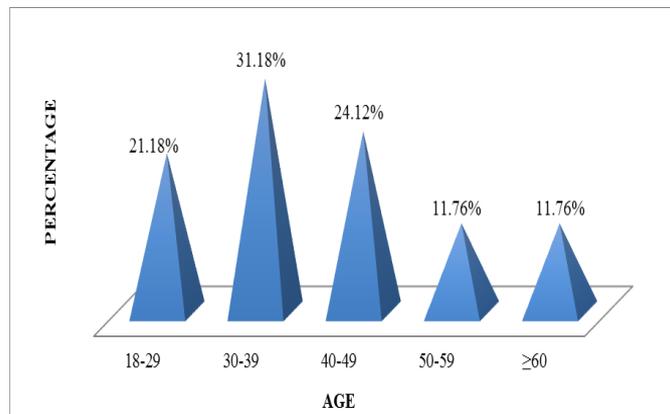
Figure 2: Distribution of patients based on age.

Categorization of patients based on psychiatric illness
All the patients were assessed for different disease conditions status and classified, Out of 340 patients 75 patients (22.06%) were suffering from psychosis, 57 patients (16.77%)were suffering from epilepsy, 41 patients (12.06%) were suffering from Bipolar Affective Disorders, 39 patients (11.47%) were suffering from depression, 37 patients (10.88%) were suffering from ADS, 32 patients(9.41%) were suffering from anxiety, 24 patients (7.06%) were suffering from headache,13 patients (3.82%) were suffering from both schizophrenia and mixed anxiety with depression,5 patients (1.47%) were suffering from OCD and 4 patients (1.18%) were suffering from sleep disorder conditions.(Table 3).

Table 3: Categorization of patients based on psychiatric illness.

Conditions	No. of patients	Percentage
Psychosis	75	22.06%
Epilepsy	57	16.77%
BPAD	41	12.06%
Depression	39	11.47%
ADS	37	10.88%

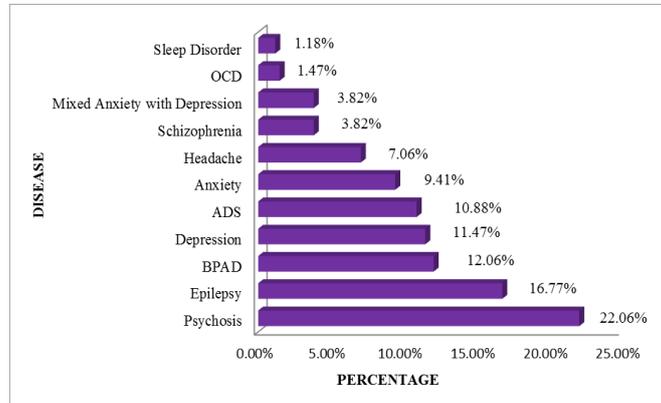| Anxiety	32	9.41%
Headache	24	7.06%
Schizophrenia	13	3.82%
Mixed Anxiety with Depression	13	3.82%
OCD	5	1.47%
Sleep Disorder	4	1.18%

Figure 3: Categorization of patients based on psychiatric illness.

Class of psychotropic drugs

Among the different classes of psychotropic drugs, the commonly prescribed class of drug is Antianxiety 193 (31.54%) followed by Antidepressants 176 (28.75%), Antipsychotics 154 (25.16%), Mood Stabilizers 89 (14.54%). (Table 4).

Table 4: Class of psychotropic drug.

Class of drugs	No. of drugs	Percentage
Antianxiety	193	31.54%
Antidepressants	176	28.76%
Antipsychotics	154	25.16%
Mood stabilizers	89	14.54%
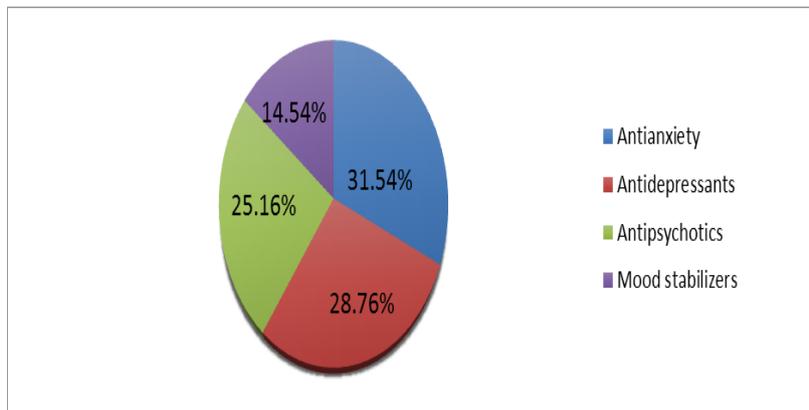
Figure 4: Class of psychotropic drug.

Classification based on individual drugs

Totally 612 drugs were prescribed in 340 patients. In that Clonazepam 89 (14.54%) was the most commonly prescribed individual psychotropic drug, followed by Sertraline 69 (11.27%), Fluoxetine 67 (10.94%), Risperidone 63 (10.29%), Olanzapine 54 (8.83%), Sodium valproate 49 (8.01%), Alprazolam 46 (7.52%), Escitalopram 34 (5.56%), Diazepam 33 (5.39%), Quetiapine 32(5.23%), Lorazepam, Lithium and Carbamazapine 20 (3.27%), Amitriptylline 5 (0.82%), Propranolol 4 (0.65%) , Haloperidol and Clozapine 2 (0.33%), and the least prescribed psychotropic drug was Chlordiazepoxide, Venlafaxine and Aripiprazole 1 (0.16%). (Table5).

Table 5: Classification based on individual drugs.

Name of drugs	No. of drugs	Percentage
Clonazepam	89	14.54%
Sertraline	69	11.27%
Fluoxetine	67	10.94%
Risperidone	63	10.29%
Olanzapine	54	8.83%
Sodium valproate	49	8.01%
Alprazolam	46	7.52%
Escitalopram	34	5.56%
Diazepam	33	5.39%
Quetiapine	32	5.23%
Lorazepam	20	3.27%
Lithium	20	3.27%
Carbamazepine	20	3.27%
Amitriptylline	5	0.82%
Propranolol	4	0.65%
Haloperidol	2	0.33%
Clozapine	2	0.33%
Chlordiazepoxide	1	0.16%
Venlafaxine	1	0.16%
Aripiprazole	1	0.16%
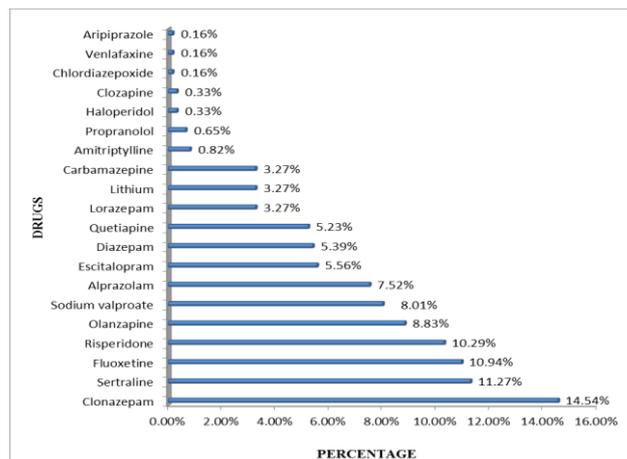
Figure 5: Classification based on individual drugs.

Number of psychotropics per prescription

In this study, more number of patients have received single psychotropic drug (44.71%) followed by two psychotropic drugs (35%), three psychotropic drugs (15.88%) and four psychotropic drugs (4.41%). (Table6).

Table 6: No: of Psychotropics per prescription.

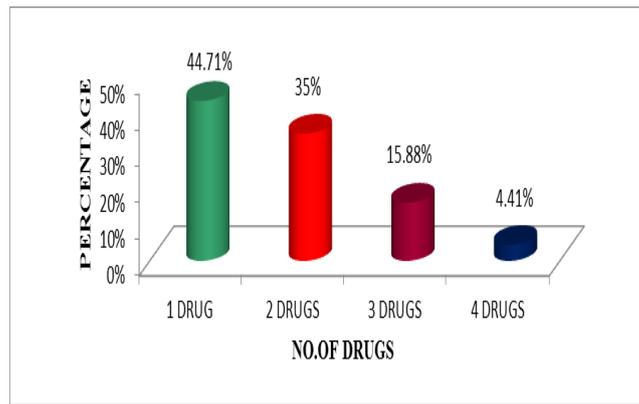| No. of psychotropics per prescription	No. of patients receiving psychotropic drugs	Percentage
Mono-therapy	152	44.71%
Bi-therapy	119	35%
Tri-therapy	54	15.88%
Poly-therapy	15	4.41%

Figure 6: No: of Psychotropic per prescription.

Prescription pattern of psychotropic drugs in bipolar affective disorder (BPAD)

Totally 70 patients are suffering from BPAD for that different class of psychotropic drugs were prescribed such as Lithium 14(20%), Olanzapine 13(18.57%), Risperidone 12 (17.14%), Sodium valproate 7(10%), Quetiapine and Clonazepam 6 (8.57%), Diazepam 3 (4.28%), Fluoxetine, Sertraline and Escitalopram 2(2.86%), Lorazepam, Carbamazapine and Alprazolam1(1.43%) were used. (Table 7).

Table 7: Prescription pattern of psychotropic drugs in BPAD.

Drugs	No. of drugs	Percentage
Lithium	14	20%
Olanzapine	13	18.57%
Risperidone	12	17.14%
Sodium valproate	7	10%
Quetiapine	6	8.57%
Clonazepam	6	8.57%
Diazepam	3	4.28%
Fluoxetine	2	2.86%
Sertraline	2	2.86%
Escitalopram	2	2.86%
Lorazepam	1	1.43%
Carbamazapine	1	1.43%
Alprazolam	1	1.43%
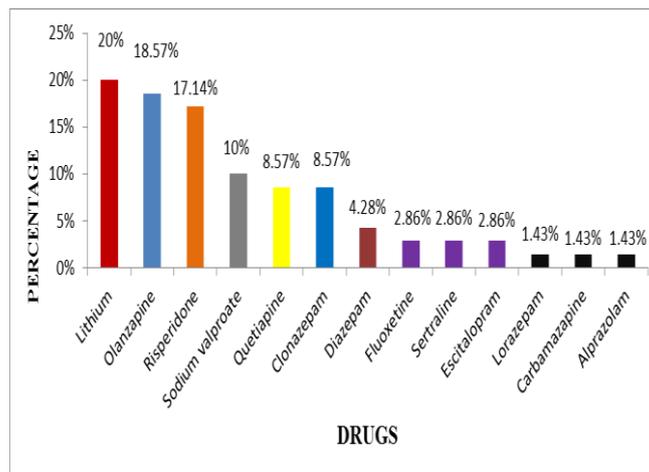
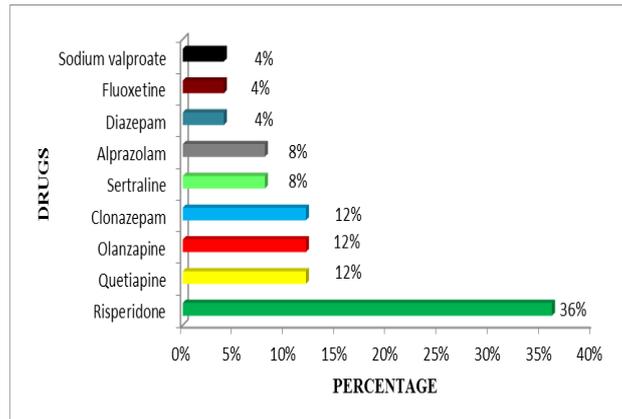*Figure 7: Prescription pattern of psychotropic drugs in BPAD.*

Prescription pattern of psychotropic drugs in schizophrenia

Totally 25 patients are suffering from Schizophrenia for that different class of psychotropic drugs were prescribed such as Risperidone 9(36%), Quetiapine, Olanzapine and Clonazepam 3(12%), Sertraline and Alprazolam 2(8%), Diazepam, Fluoxetine and Sodium valproate 1(4%) were used. (Table 8).

Table 8: Prescription pattern of psychotropic drugs in schizophrenia.

Drugs	No. of drugs	Percentage
Risperidone	9	36%
Quetiapine	3	12%
Olanzapine	3	12%
Clonazepam	3	12%
Sertraline	2	8%
Alprazolam	2	8%
Diazepam	1	4%
Fluoxetine	1	4%
Sodium valproate	1	4%

Figure 8: Prescription pattern of psychotropic drugs in schizophrenia.

Prescription pattern of psychotropic drugs in psychosis

Totally 175 patients are suffering from psychosis for that different class of psychotropic drugs were prescribed such as Risperidone 33(18.86%), Olanzapine 29(16.57%), Clonazepam 27(15.43%), Sertraline 21(12%), Fluoxetine 18(10.29%), Alprazolam 13(7.43%), Escitalopram 12(6.86%), Sodium valproate 5(2.86%0, Lithium, Diazepam, Lorazepam and Amitriptyline 3(1.71%), Quetiapine2(1.15%), Haloperidol, Carbamazepine, and Aripiprazole 1(0.57%) were used. (Table 9).

Table 9: Prescription pattern of psychotropic drugs in psychosis.

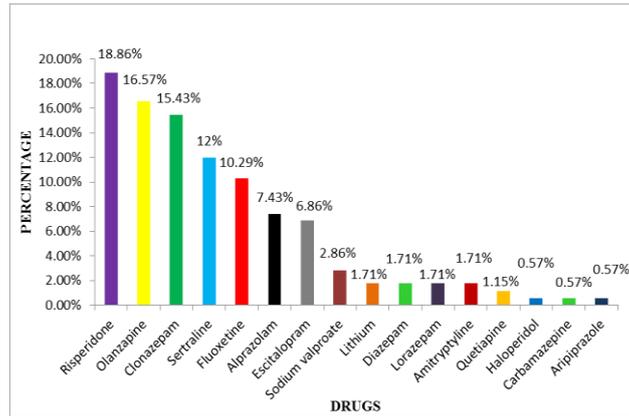| Drugs	No. of drugs	Percentage
Risperidone	33	18.86%
Olanzapine	29	16.57%
Clonazepam	27	15.43%
Sertraline	21	12%
Fluoxetine	18	10.29%
Alprazolam	13	7.43%
Escitalopram	12	6.86%
Sodium valproate	5	2.86%
Lithium	3	1.71%
Diazepam	3	1.71%
Lorazepam	3	1.71%
Amitryptyline	3	1.71%
Quetiapine	2	1.15%
Haloperidol	1	0.57%
Carbamazepine	1	0.57%
Aripiprazole	1	0.57%

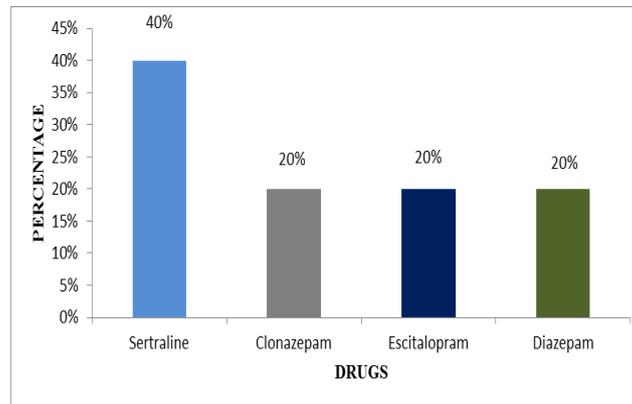*Figure 9: Prescription pattern of psychotropic drugs in psychosis.*

Prescription pattern of psychotropic drugs in sleep disorders

Totally 5 patients are suffering from sleep disorders for that different class of Psychotropic drugs were prescribed such as Sertraline 2(40%), Clonazepam, Escitalopram and Diazepam 1(20%) were used. (Table 10).

Table 10: Prescription pattern of psychotropic drugs in sleep disorders.

Drugs	No. of patients	Percentage
Sertraline	2	40%
Clonazepam	1	20%
Escitalopram	1	20%
Diazepam	1	20%

Figure 10: Prescription pattern of psychotropic drugs in sleep disorders.

Prescription pattern of psychotropic drugs in obsessive compulsive disorder (OCD)

Totally 7 patients are suffering from OCD for that different class of psychotropic drugs were prescribed such as Fluoxetine 3(42.85%), Clonazepam 2(28.57%), Risperidone 1 (14.29%) and Alprazolam 1 (14.29%). (Table11).

Table 11: Prescription pattern of psychotropic drugs in OCD.

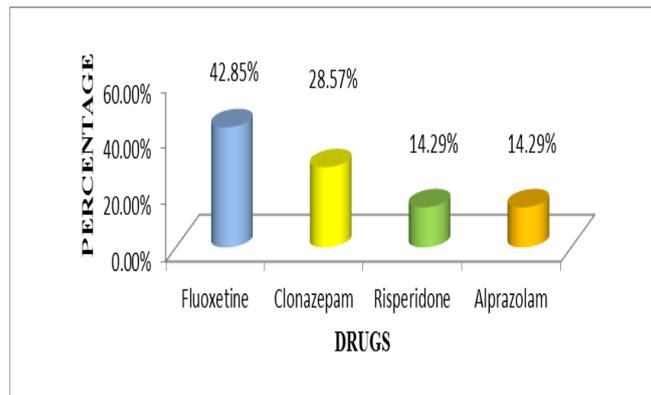| Drugs	No. of patients	Percentage
Fluoxetine	3	42.85%
Clonazepam	2	28.57%
Risperidone	1	14.29%
Alprazolam	1	14.29%

Figure 11: Prescription pattern of psychotropic drugs in OCD.

Prescription pattern of psychotropic drugs in mixed anxiety with depression
Totally 25 patients are suffering from Mixed anxiety with depression for that different class of psychotropic drugs were prescribed such as Sertraline 7(28%), Fluoxetine and Alprazolam 5(20%). Clonazepam 3(12%), Diazepam 2(8%), Olanzapine, Lorazepam and Sodium Valproate 1(4%) were used. (Table 12).

Table 12: Prescription pattern of psychotropic drugs in mixed anxiety with depression.

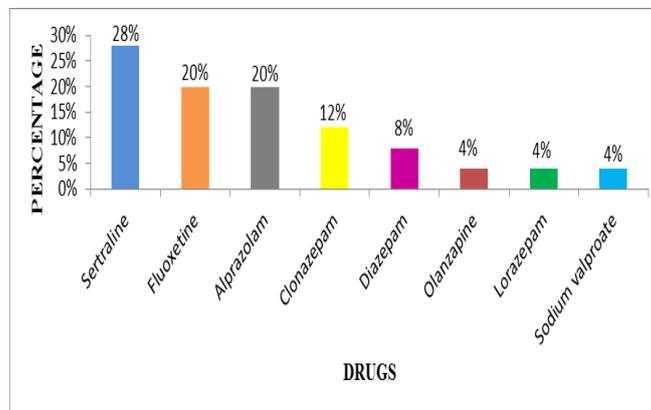| Drugs	No. of patients	Percentage
Sertraline	7	28%
Fluoxetine	5	20%
Alprazolam	5	20%
Clonazepam	3	12%
Diazepam	2	8%
Olanzapine	1	4%
Lorazepam	1	4%
Sodium valproate	1	4%

Figure 12: Prescription pattern of psychotropic drugs in mixed anxiety with depression.

Prescriptionpattern of psychotropic drugs in anxiety
Totally 61 patients are suffering from Anxiety for that different class of psychotropic drugs were prescribed such as Clonazepam 20(32.78%), Fluoxetine 12(19.67%), Sertraline 10(16.39%), Alprazolam and Escitalopram 6(9.84%), Risperidone, Diazepam and Olanzapine 2(3.28%), Quetiapine 1(1.64%) were used. (Table 13).

Table 13: Prescription pattern of psychotropic drugs in anxiety.

Drugs	No. of patients	Percentage
Clonazepam	20	32.78%
Fluoxetine	12	19.67%
Sertraline	10	16.39%
Alprazolam	6	9.84%
Escitalopram	6	9.84%
Diazepam	2	3.28%

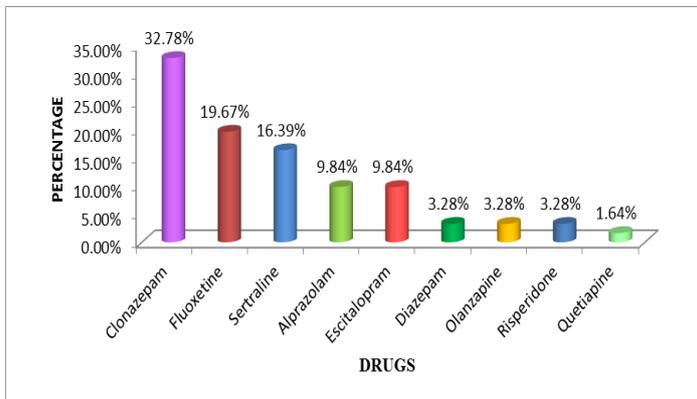| Olanzapine	2	3.28%
Risperidone	2	3.28%
Quetiapine	1	1.64%

Figure 13: Prescription pattern of psychotropic drugs in anxiety.

Prescription pattern of psychotropic drugs in depression

Totally 57 patients are suffering from Depression for that different class of psychotropic drugs were prescribed such as Sertraline 15(26.33%), Clonazepam 11(19.38%), Alprazolam, Fluoxetine and Escitalopram 6(10.53%), Sodium valproate and Risperidone 3(5.23%), Diazepam and Olanzapine 2(3.50%), Lorazepam, Lithium and Quetiapine 1(1.75%) were used. (Table 14).

Table 14: Prescription pattern of psychotropic drugs in depression.

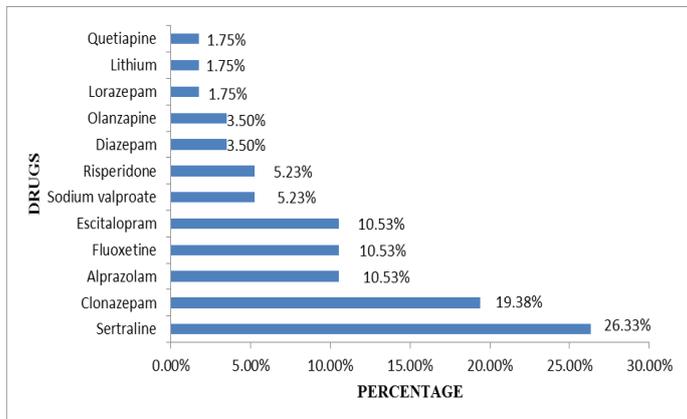| Drugs	No. Of patients	Percentage
Sertraline	15	26.33%
Clonazepam	11	19.38%
Alprazolam	6	10.53%
Fluoxetine	6	10.53%
Escitalopram	6	10.53%
Sodium valproate	3	5.23%
Risperidone	3	5.23%
Diazepam	2	3.50%
Olanzapine	2	3.50%
Lorazepam	1	1.75%
Lithium	1	1.75%
Quetiapine	1	1.75%

Figure 14: Prescription pattern of psychotropic drugs in depression.

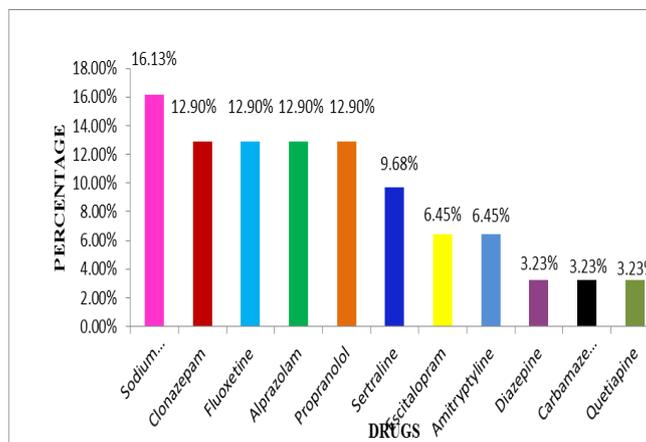**Prescription pattern of psychotropic drugs in headache**

Totally 31 patients are suffering from Headache for that different class of psychotropic drugs were prescribed such as Sodium valproate 5(16.13%), Clonazepam, Fluoxetine, Alprazolam and Propranolol 4(12.90%), Sertraline 3(9.68%), Escitalopram and Amitryptyline

2(6.45%), Diazepam, Carbamazepine and Quetiapine   1(3.23%) were used. (Table 15).

Table 15: Prescription pattern of psychotropic drugs in headache.

Drugs	No. of patients	Percentage
Sodium valproate	5	16.13%
Clonazepam	4	12.90%
Fluoxetine	4	12.90%
Alprazolam	4	12.90%
Propranolol	4	12.90%
Sertraline	3	9.68%
Escitalopram	2	6.45%
Amitryptyline	2	6.45%
Diazepine	1	3.23%
Carbamazepine	1	3.23%
Quetiapine	1	3.23%

Figure 15: Prescription pattern of psychotropic drugs in headache.

Prescription pattern of psychotropic drugs in epilepsy
Totally 77 patients are suffering from Epilepsy for that different class of psychotropic drugs were prescribed such as Sodium valproate 26(33.78%), Carbamazepine 17(22.08%), Clonazepam 10(12.99%), Escitalopram 5(6.5%), Olanzapine and Alprazolam 3(3.89%), Sertraline, Diazepam, Fluoxetine, Risperidone and Clozapine 2(2.6%), Lithium, Lorazepam and Venlafaxine 1(1.29%). (Table 16).

Table16: Prescription pattern of psychotropic drugs in epilepsy.

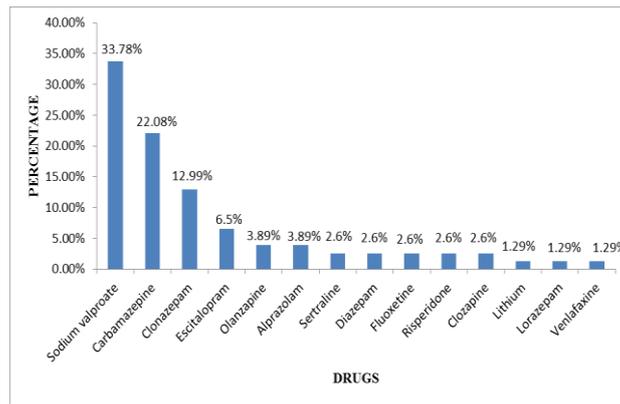| Drugs	No. of patients	Percentage
Sodium valproate	26	33.78%
Carbamazepine	17	22.08%
Clonazepam	10	12.99%
Escitalopram	5	6.5%
Olanzapine	3	3.89%
Alprazolam	3	3.89%
Sertraline	2	2.6%
Diazepam	2	2.6%
Fluoxetine	2	2.6%
Risperidone	2	2.6%
Clozapine	2	2.6%
Lithium	1	1.29%
Lorazepam	1	1.29%
Venlafaxine	1	1.29%

Figure 16: Prescription pattern of psychotropic drugs in epilepsy.

Prescription pattern of psychotropic drugs in alcohol dependence syndrome (ADS)

Totally 79 patients are suffering from ADS for that different class of psychotropic drugs were prescribed such as Quetiapine 18(22.78%), Diazepam 16(20.25%), Fluoxetine 14(17.72%), Lorazepam 13(16.45%), Sertraline, Alprazolam 5(6.33%), Clonazepam 2 (2.52%), Olanzapine, Haloperidol, Lithium, Sodium valproate, Risperidone and Chlordiazepoxide 1 (1.27%) were used. (Table 17).

Table 17: Prescription pattern of psychotropic drugs in ADS.

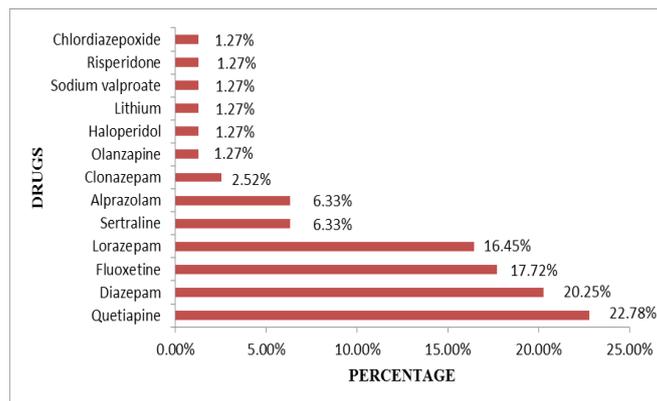| Drugs	No. of patients	Percentage
Quetiapine	18	22.78%
Diazepam	16	20.25%
Fluoxetine	14	17.72%
Lorazepam	13	16.45%
Sertraline	5	6.33%
Alprazolam	5	6.33%
Clonazepam	2	2.52%
Olanzapine	1	1.27%
Haloperidol	1	1.27%
Lithium	1	1.27%
Sodium valproate	1	1.27%
Risperidone	1	1.27%
Chlordiazepoxide	1	1.27%

Figure 17: Prescription pattern of psychotropic drugs in ADS.

Categorization of patients with comorbidities

All the patients were assessed for different conditions status and classified, out of 340 prescriptions 30 patients were suffering from comorbid conditions. 11 patients (36.67%) were affected with Hypertension, 5 patients (16.68%) were having mild MR, 4 patients (13.34%) were undergone for treatment of Diabetes, 3 patients (10%) were affected with Hypothyroidism and 1 patient (3.33%) were reported with CVA, CAD, Allergy, TB, Fissure Foot, Cough and Asthma. (Table 18).

Table 18: Categorization of patients based on co morbidities.

Conditions	No. of patients	Percentage
Hypertension	11	36.67%
Mild mr	5	16.68%
Diabetes	4	13.34%
Hypothyroidism	3	10%
Cva	1	3.33%
Cad	1	3.33%
Allergy	1	3.33%
Tb	1	3.33%
Fissure foot	1	3.33%
Cough	1	3.33%
Asthma	1	3.33%
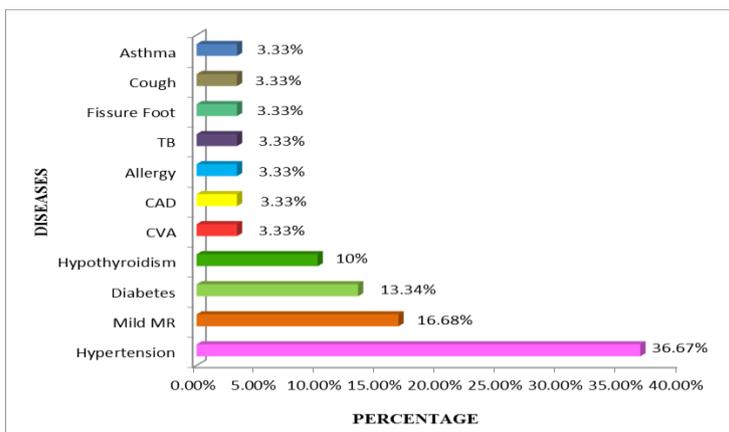
Figure 18: Categorization of patients based on co morbiditis.

Drugs prescribed for comorbidities

Among the different classes of drugs, other psychiatric drugs were 11 (30.57%) followed by Vitamins 5 (13.89%), Gastro protectant were 4 (11.12%), Antihypertensive, Muscle relaxant and other conditions were 3 (8.33%), Antihistamine and NSAIDs were 2 (5.56%), Antibiotics, Antidiabetic, Hypolipidaemic and Analgesic were 1 (2.77%). (Table19).

Table 19: Drugs prescribed for co morbidities.

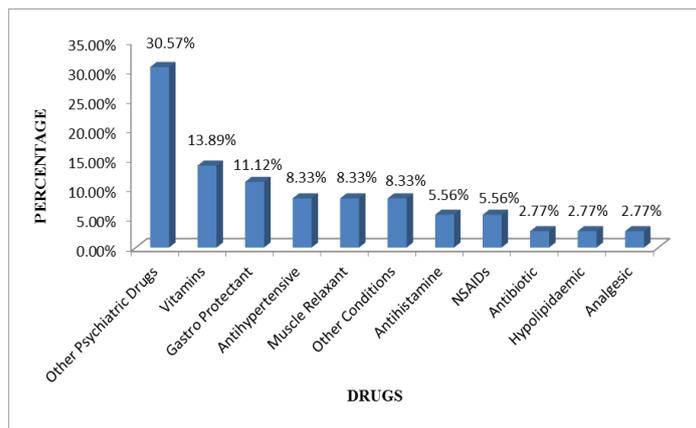| Class of drugs	No. of drugs	Percentage
Other psychiatric drugs	11	30.57%
Vitamins	5	13.89%
Gastro protectant	4	11.12%
Antihypertensive	3	8.33%
Muscle relaxant	3	8.33%
Other conditions	3	8.33%
Antihistamine	2	5.56%
Nsaids	2	5.56%
Antibiotic	1	2.77%
Hypolipidaemic	1	2.77%
Analgesic	1	2.77%

Figure 19: Drugs prescribed for co morbidities.

Route of administration

In 340 patients, most frequently used route for drug administration were Per oral 1048(97.85%) followed by Intravenous 12(1.12%), Intramuscular 9(0.84%), Transdermal 1(0.09%) were used. (Table 20).

Table 20: Details on route of administration.

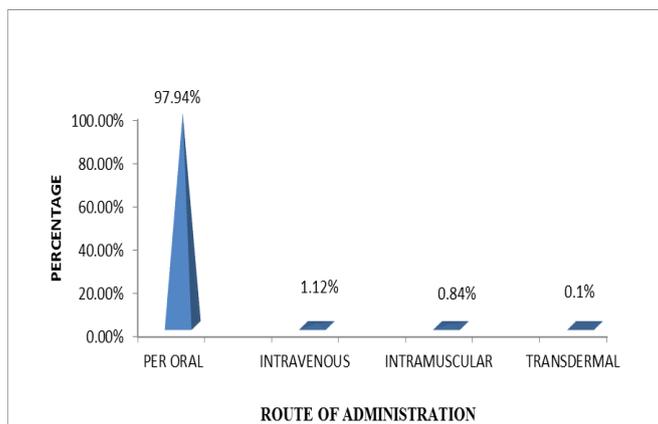| Route of administration	No. of drugs	Percentage of drugs
Per oral	1048	97.94%
Intravenous	12	1.12%
Intramuscular	9	0.84%
Transdermal	1	0.1%

Figure 20: Details on route of administration.

CONCLUSION

Our study concludes that, male patients are more visited to psychiatric outpatient department compared to females. Among the patient's majority are suffering and receiving treatment for psychosis. Single psychotropic drug is commonly preferred to achieve the optimum therapeutic effect. Among them anti-anxiety class of drugs were commonly used and clonazepam as an individual drug. Pharmacist plays a role in monitoring of long-term adverse reactions and rational usage of drugs.

Conflict of interest

The authors declared no conflict of interest.

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