

RETROSPECTIVE EXAMINATION OF ANTIPSYCHOTIC PHARMACOTHERAPY
PATTERNS AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Drug utilization studies play a crucial role in promoting rational prescribing practices, understanding drug usage prevalence within populations, and evaluating the impact of specific interventions on community drug utilization trends. **Materials and Methods:** This prospective observational study was conducted over six months in the psychiatry ward of a tertiary care hospital. Data were collected to analyze psychiatric diagnoses, antipsychotic prescription patterns, and prescription rationality based on the World Health Organization (WHO) prescribing indicators. Additionally, the defined daily dose (DDD), prescribed daily dose (PDD), and the PDD-to-DDD ratio of the antipsychotics were assessed. **Results:** The majority of the patients were male (60%), with most aged between 31 and 40 years. Schizophrenia (30%) was the most frequent diagnosis, followed by bipolar disorder (20%) and mania (16.6%). Atypical antipsychotics were predominantly prescribed (80%). Sedative-hypnotics were the most commonly co-prescribed drugs (40%). Polypharmacy was observed in 13.3% of the prescriptions. The average number of drugs per prescription was greater than two. Prescriptions using generic names were relatively low (65%). The PDD-to-DDD ratio was found to be less than 1 for sertraline, clonazepam, estazolam, quetiapine, zolpidem, alprazolam, mirtazapine, and clozapine; equal to 1 for escitalopram, risperidone, haloperidol, and amitriptyline; and greater than 1 for olanzapine. **Conclusion:** This study offers valuable insights into antipsychotic prescribing patterns for psychiatric patients, demonstrating that most prescriptions were rational and complete, with appropriate drug utilization in the majority of cases.

KEYWORDS: Drug utilization patterns, Antipsychotics, defined daily dose, Prescribed daily dose drug utilization and evaluation, rational prescription, polypharmacy, Psychiatric cohorts.

INTRODUCTION

Psychiatric diseases form a major public health concern, both in terms of the number of people affected and the burden these diseases place on society. Four of the top 10 health problems that contribute to disability-adjusted life years (DALY) are mental disorders.^[1] In India, several epidemiological surveys have been carried out concerning mental and behavioural illnesses and prevalence rates vary from 9.5 to 370 per 1000 inhabitants.^[2] Antipsychotic medications, also referred to as Neuroleptics are adopted since 1950s in the clinical setting for the management of psychiatric ailments such as psychoses, schizophrenia, schizoaffective and bipolar disorders. There seem to be no substantial changes in this therapeutic class except for the recent addition of "atypical" antipsychotics.^[3, 4]

Antipsychotic medicine prescribing patterns have changed around the globe, with newer atypical antipsychotics having largely supplanted classic antipsychotics (typical antipsychotics). These newer

medications, such as risperidone and olanzapine, have efficacy that is at least similar to that of older treatments like chlorpromazine and haloperidol, while having a small number of side effects.^[5,6] According to studies conducted, antipsychotic drug prescriptions to treat psychiatric illness have proliferated in many regions around the world during the last two decades.^[7,8] Drug utilization studies promote rational drug prescribing, understanding prevalence of drug usage in the population and investigate whether a specific intervention impacts drug use in the community by studying drug utilization trends.^[9] Antipsychotics, also known as neuroleptics, are one of the most commonly prescribed drugs in the psychiatry outpatient department (OPD). They are used to control psychotic symptoms in a wide range of disorders such as schizophrenia and bipolar disorder.^[10] All the antipsychotics have considerable adverse effects such as involuntary movement, metabolic syndrome, and gynecomastia and thus, the choice of a particular drug depends on efficacy, safety, and affordability of the drug in a particular patient.^[11]

MATERIALS AND METHODS

Study Site: Department of Psychiatry, Shree Krishna Hospital, Karamsad.

Study Design: Prospective observational study.

Study Period: Six months.

Study Population: Formula used for calculating sample size is: $N = Z^2 PQ / d^2$ N is the required sample size, $Z = 1.96$ for 95% confidence, P is prevalence, Q is 1-P Sample size of 150 participants are selected for the study.

Sources for Data Collection

Patients Case Sheet.

- Interview with patient's caretakers.
- Patients Prescriptions.

Inclusion Criteria Patients of all ages and both the genders who were diagnosed with psychosis where at least one antipsychotic was prescribed were included in the study.

Exclusion Criteria Those patients who did not receive any antipsychotic drugs or who were taking antipsychotic drugs prescribed from somewhere other than our hospital were excluded from the study.

Study Procedure

- Informed Consent form was prepared

- The data collection forms shall be used to collect and assess patient data for the study after obtaining the informed consent.
- The demographic details of the patients were noted.
- All the data regarding the diagnosis and treatment of the patients were recorded.
- The recorded data were analyzed for psychiatric diagnosis, patterns of antipsychotic prescription, and the rationality of prescriptions according to the WHO prescribing indicators. Furthermore, defined daily dose (DDD) of the antipsychotics per 1000 inhabitants per day, prescribed daily dose (PDD) of the antipsychotics, and the PDD-to DDD ratio were assessed.
- Patients were enrolled based on the Inclusion and Exclusion Criteria
- The recorded data were analyzed for psychiatric diagnosis, patterns of antipsychotic prescription, and the rationality of prescriptions according to the WHO prescribing indicators
- Statistical Analysis was performed by using the Microsoft Excel 2010

RESULTS

A total of 150 prescriptions from patients with a diagnosis of psychiatric disorder and who were receiving at least one antipsychotic drug from the psychiatry department were evaluated.

Table 1: Gender distribution of the study participants.

Gender	Number of patients	Percentage of patients
Male	90	60
Female	60	40

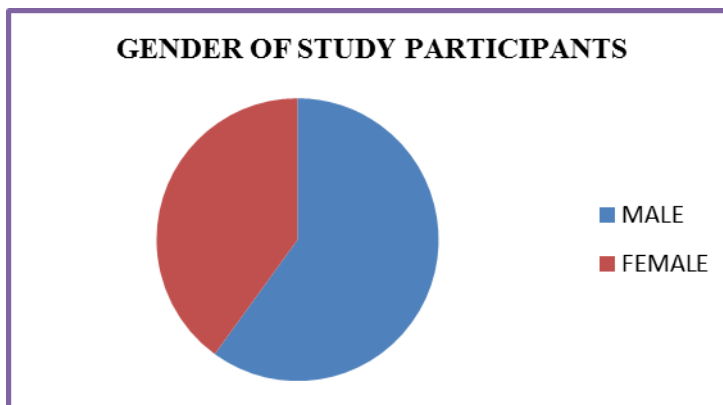


Figure 1: Gender of the study participants.

Table 2: Age distribution of the study participants.

Age Group in years	Number of patients	Percentage of patients
21-30	30	20
31-40	55	36.6
41-50	40	26.6
51-60	15	10
>60	10	6.6

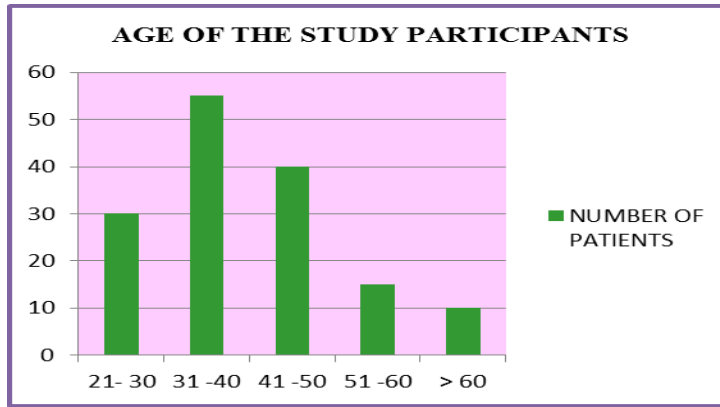


Figure 2: Age of the study participants.

Table 3: Diagnosis of the study population in whom antipsychotics are prescribed.

Diagnosis	Number of patients	Percentage of patients
Schizophrenia	45	30
Bipolar disorders	30	20
Mania	25	16.6
Substance abuse	15	10
Anxiety and sleep disorders	13	8.6
Depression	10	6.6
Panic disorder	07	4.6
Alcohol withdrawal symptoms	05	3.3

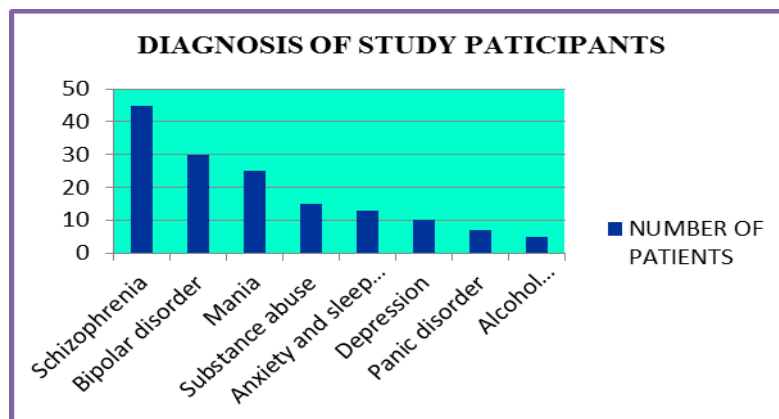


Figure 3: Diagnosis of the study participants.

Table 4: Antipsychotic drugs prescribed to the study participants.

Name of the Drug	Number of patients	Percentage of Patients
Atypical antipsychotics	120	80
Typical Antipsychotics	30	20

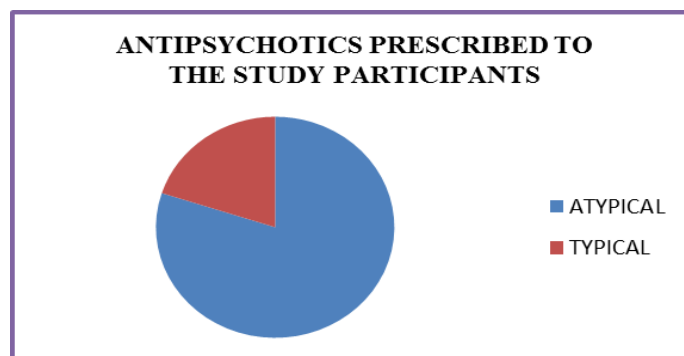


Figure 4: Antipsychotics prescribed to the study participants.

Table 5: Concomitant drugs prescribed to the study participants.

Name of the Drug	Number of patients	Percentage of Patients
Sedatives - Hypnotics	60	40
Antidepressants	40	26.6
Mood Stabilizers	30	20
Antiepileptics	10	6.6
Thyroxine	10	6.6

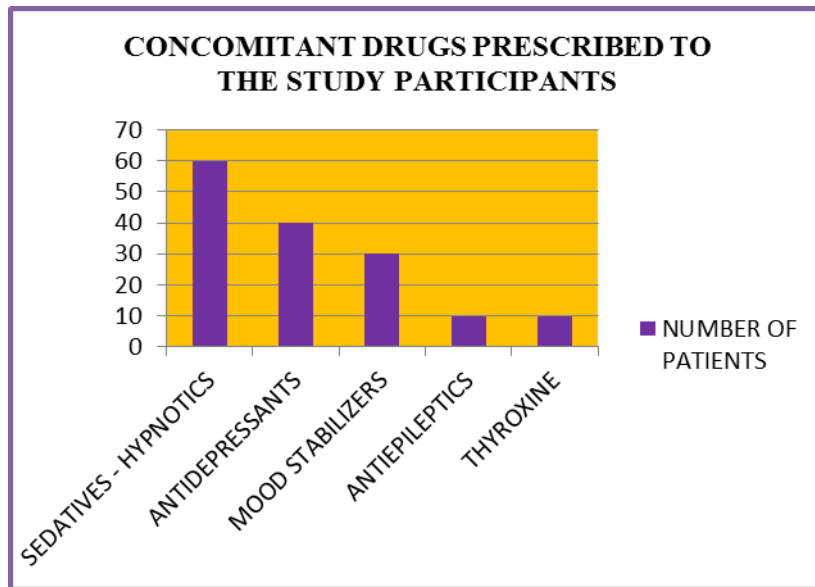


Figure 5: Concomitant drugs prescribed to the study participants.

Table 6: Number of drugs per prescription in the study participants.

Total number of drugs per prescription	Number of Prescriptions	Percentage of Prescriptions
1	05	3.3
2	25	16.6
3	55	36.6
4	45	30
5	20	13.3

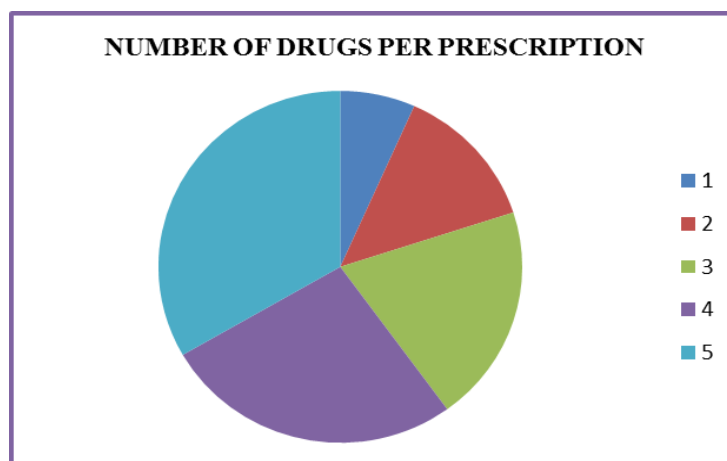


Figure 6: Number of drugs per prescription in the study participants.

Table 7: As per WHO prescribing Indicators.

Parameters	Value
The average number of drugs per prescription	>2
Prescribing of drugs by generic name	65%
Percentage of prescriptions with an injection	0
Percentage of prescriptions with fixed drug combinations	0
Prescribing of drugs prescribed from the WHO essential medicines list	42%
Prescribing from national list of essential medicines	46%

Table 8: ATC/DDD classification with calculated DID, PDD values of prescribed antipsychotics, and PDD/DDD ratio.

Drug	ATC Code	DDD (mg)	PDD (mg)	PDD/DDD Ratio
Sertraline	N06AB06	50	25	0.5
Escitalopram	N06AB10	10	10	1
Clonazepam	N03AE01	8	0.5	0.0625
Estazolam	N05CD04	3	1	0.33
Risperidone	N05AX08	5	5	1
Quetiapine	N05AH04	400	200	0.5
Olanzapine	N05AH03	10	12	1.2
Haloperidol	N05AD01	8	8	1
Zolpidem	N05CF02	10	6.25	0.625
Alprazolam	N05BA12	1	0.75	0.75
Amitriptyline	N06AA09	75	75	1
Mirtazapine	N06AX11	30	15	0.5
Clozapine	N05AH02	300	188	0.63

DISCUSSION

In our study, majority of the patients were male (60%) as compared to female (40%) as shown in Table 1. The results showed that there was an overall higher prescribing rate of psychotropics in male patients.^[12] Majority of the patients in our study belonged to 31–40 years of age group (~36.6%). This was similar to the findings published in the study by Paul et al.^[13] The lesser attendance of female patients at the hospital may be due to lack of awareness toward their illness due to various societal and geographical reasons. Age distribution of the patients is demonstrated in Table 2. The diagnosis of the study population and the most common diagnosis among these patients was schizophrenia (30%) followed by bipolar disorder (20%), mania (16.6%), substance abuse (10%), anxiety and sleep disorders (8.6%), depression (6.6%), panic disorder (4.6%) and alcohol withdrawal symptoms (3.3%) as given in Table 3. This is similar to another study in which schizophrenia was the most common indication for prescribing antipsychotics.^[14] Table 4 gives the prescribing patterns of antipsychotics medications that were prescribed in these patients. Among the antipsychotics, atypical antipsychotics (80%) were prescribed more often as compared to typical antipsychotics. This is consistent with the finding of other similar drug utilization study of antipsychotics.^[15] The increased prescribing of atypical antipsychotics could be due to the fewer side effects and hence better tolerability ultimately giving better patient compliance. Sedative-hypnotics (40%) were the most common concomitantly prescribed drugs. Benzodiazepines have

been found to calm the agitated patients of psychosis and provide very short-term sedation.^[16]

Polypharmacy, as defined by majority of studies as prescription of five or more medications,^[17] was observed in 20 (13.3%) prescriptions in the study. Polypharmacy may be due to concomitant conditions of the patients, for which they were already on treatment. Furthermore, a number of medications were prescribed for treating various adverse effects of psychotropics. The average number of drugs per prescription was >2, prescribing using generic names were low (65%). This is in contrast to the findings published by Shah A et al in which they found the average number of drugs per prescription was <2 and prescribing using generic names were quite high (95.02%).^[11] Most commonly oral drugs were preferred and there were no incidences of using injectables and fixed dose combinations (FDCs). This is in contrast to the findings published by Yadav et al., in which they found overall high incidence of FDC prescriptions in psychiatry patients.^[18] The percentage of drugs prescribed from the WHO EML and NLEM was less than 50%. This is similar to the findings published by Oommen et al.^[19]

The ATC classification system classifies the active ingredients of drugs according to the organ or system, on which they act and their therapeutic, pharmacological, and chemical properties.^[20,21] DDD is defined as the assumed average maintenance dose per day for a drug used for its main indication in adults. The DDD is a unit of measurement and the data presented in DDD give a rough estimate of drug consumption, but not a

representation of actual use. PDD is defined as the average dose prescribed according to a representative sample of prescriptions. For antipsychotics, the recommended dose varies from one indication to another. In such cases, it is important that diagnosis is linked to the PDD given. PDD/DDD ratio are lower than 1 for Sertraline, Clonazepam, Estazolam, Quetiapine, Zolpidem, Alprazolam, Mirtazapine and Clozapine. This may indicate the reluctance of clinicians in prescribing higher range of dosing keeping in mind the safety profile of these drugs. The PDD/DDD ratio was equal to 1 for Escitalopram, Risperidone, Haloperidol, Amitriptyline and the PDD/DDD ratio was greater than 1 for Olanzapine which indicate adequate dosing with these antipsychotics.

CONCLUSION

This study provides valuable insights into the prescribing patterns of antipsychotic medications for patients with various psychiatric conditions. While most prescriptions were rational and complete, instances of polypharmacy were observed in few of them. The use of generic drug names and adherence to the WHO Essential Medicines List and National List of Essential Medicines (NLEM) should be further encouraged. Ongoing drug utilization studies are essential to monitor drug consumption trends, assess their impact on patient outcomes, and improve overall quality of life. Additionally, regular monitoring of patient compliance is crucial to optimize therapeutic outcomes, enhance healthcare quality, and reduce the strain on healthcare systems.

Conflict of Interest: None declared.

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