



Research article

Assessment of anti-psychotic drug utilisation in psychiatry ward of tertiary care hospital**Vishal Singh, Mohit Yadav, Manish Kumar***

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ABSTRACT

A total of 50 patients were enrolled in the study from October 2021 to April 2022. Total numbers of drugs prescribed were found to be 244 including the anti-psychotics. The total numbers of anti-psychotics prescribed were found to be 160. The ratio of anti-psychotics to the total number of drugs was found to be 65.7%. Antipsychotics were the most used drugs (69.6%) followed by multivitamins (7.37%), following them were proton pump inhibitors (5.73%), they were followed by analgesics (5.32%), following analgesics were cognition enhancers (4.9%), cognition enhancers were followed by mood stabilizers (4.09%), mood stabilizers were followed by anti-hypertensives (3.2%) which in turn were followed by anti-cholinergics (2.04%) and calcium+ vitamin D3 supplements (1.6%).

Keywords: Drug Utilization Review, Anti-psychotics, Psychiatric disorders.

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INTRODUCTION

There are many different types of mental illnesses, each of which has set of symptoms. They are defined by a combination of abnormal thoughts, beliefs, emotions, actions, and interpersonal connections [1]. For mental illnesses such as depression, there are effective preventative methods [2]. Mental illnesses have good treatments and approaches available to help alleviate the suffering they cause. Access to care and resources that can give therapy and social support is crucial [4]. Mental disorders are becoming more prevalent over the world, bringing substantial health dangers as well as massive social, civil rights, and economic consequences in every country [5]. There are a variety of mental diseases, each with its unique set of symptoms. A combination of deviant thoughts, beliefs, feelings, behaviour, and interpersonal ties characterizes them. Anxiety, bipolar disorder, schizophrenia and other psychotic diseases, dementia, and behavioral disorders such as autism are examples of mental illnesses [6]. For mental illnesses such as depression, there are effective preventative methods [7]. Mental illnesses have good treatments and approaches available to help alleviate the suffering they cause [8]. Access to care and resources that can give therapy and social support is crucial [9]. Mental disorders are becoming more prevalent over the world, bringing substantial health dangers as well as major social, civil rights, and economic consequences in every country [10]. Dopamine is among the several molecules that transmit

messages through one section of the brain to the next in the brain [11]. It also helps us to manage our muscles and movements [12]. It is considered that excessive quantities of dopamine neuro transmitters to function abnormally, leading to psychotic symptoms [13]. Antipsychotic medications act by reducing dopamine in the brain or restoring the balance of dopamine with other neurochemicals. There are two types of antipsychotic medications:

- Traditional 'first generation' (older) antipsychotics, which have been in use since the 1950s.
- Atypical antipsychotics, often known as "second generation" (newer) antipsychotics, have been in use since the 1990s.
- While both types of medications are effective, the newer ones offer some advantages over the older ones, including:
- A reduced risk of getting 'tardive dyskinesia,' or uncontrollable movement of the mouth, tongue, and, in certain circumstances, other parts of the body

Despite the fact that newer antipsychotic drugs are more often used than earlier generations, some people prefer the older medications [14]. Since a long time, antipsychotic medicines have indeed been available in India [15]. Antipsychotic pharmacopeia has grown over time, and practically all new antipsychotics are now available in India [16]. Atypical antipsychotics have become the favored choice throughout the years due to their low side-effect

profile, and most recent guidelines also urge using atypical medicines as first line treatment for schizophrenia.

Antipsychotic medicines can help with illusions and hallucinations, which are common symptoms of psychosis [17]. The most popular therapies for schizophrenia are antipsychotic drugs, often known as strong tranquilizers and neuroleptics [18]. They're always used to treat people with psychosis who have bipolar illness, depression, or Alzheimer's disease. Antipsychotics are also used for mood stabilization in bipolar illness, anxiety reduction in anxiety disorders, and tic reduction in Tourette syndrome [19]. Antipsychotic medicines can help a person suffering from severe psychosis settle down and remove their disorientation in minutes or hours, or they can require three to 4 or six weeks to work [20]. These medications can help with symptoms but not with the underlying problem [21]. Antipsychotics can help avoid additional episodes of psychosis when used over time [22]. Antipsychotic drugs can benefit some patients with psychosis and mental disorders, but they can also have substantial negative effects [23]. The goal of pharmaceutical therapy is to decrease and regulate symptoms while minimizing negative effects. Antipsychotic medication used in conjunction with other therapies and support can help patients control their symptoms and improve their quality of life [24]. Treatment, peer interaction, school and work counseling, as well as housing and employment assistance, can all be beneficial [25]. To help clients cope with sounds and other auditory hallucinations, some clinicians now offer cognitive-behavioral therapy [26]. If you're on antipsychotic medication, it's extremely crucial to look after your physical health. Both schizophrenia and the drugs used to treat it have been associated with an increased risk of hyperglycemia and other major health issues [27]. Regular examinations and medical care might assist you in maintaining good physical health. Eating a well-balanced diet, exercising regularly, and sleeping sufficiently can all help you get and remain healthy [28].

Antipsychotic medications like haloperidol and chlorpromazine disrupt dopamine D2 receptors in the brain's dopaminergic pathways [29]. This indicates that dopamine delivered through these channels has a smaller impact. Psychotic experiences have been linked to excessive dopamine release in the mesolimbic pathway [30]. In schizophrenic and bipolar illness, low dopamine production in the prefrontal cortex and increased dopamine release in plenty of other pathways are linked to psychotic episodes [31].

Antipsychotics (particularly atypical neuroleptics) antagonize 5-HT2A (5-hydroxytryptamine) receptors in addition to dopamine antagonistic actions [32]. Different 5-HT2A receptor alleles have been linked to schizophrenic and other psychoses, such as

depression. Elevated amounts of 5-HT2A receptors have previously been observed in sub - cortical locations, particularly in the right caudate nucleus [33].

Antipsychotics aren't very selective, blocking dopaminergic inside the mesocortical, tuberoinfundibular, and substantianigra pathways [34]. The use of extra pathways to target D2 (dopamine) sites is thought to have some of the same negative side effects as standard antipsychotics (see above). Potency refers to the drug's ability to connect to dopaminergic sites rather than its utility [35]. Low-potency antipsychotics, such as chlorpromazine and thioridazine, have lower drowsiness and soothing effect than high-potency antipsychotics, such as haloperidol, which have dosages of a few milligrams [36]. Most atypical antipsychotic medications also focus on serotonin receptors, particularly 5-HT2A and 5-HT2C receptors, and have a comparable blocking impact on D2 receptors [37]. Clozapine and quetiapine both appear to bind for just long enough to produce antipsychotic actions but not long enough to cause extrapyramidal side effects or prolactin hypersecretion [38]. Antagonism of 5-HT2A promotes dopamine receptor action in the nigrostriatal pathway, which reduces the risk of extrapyramidal side effects in atypical antipsychotics.

MATERIALS AND METHODS

Study Design

The present study is a prospective observational study.

Study Site

The study was conducted at in-patient department of psychiatry ward Maharishi Markandeshwar Hospital, Mullana which is a tertiary care teaching. Hospital with different specialties and provides healthcare facilities to the people residing in and around Ambala district.

Study Population

In this study 50 patients on anti-psychotic therapy were recruited.

Study Period

The study was conducted over a period of six months.

Sample Size

A total of 50 patients were recruited.

Study Criteria

Subjects were enrolled into the study after taking consent form and following factors were included as inclusive and exclusive criteria.

Inclusion criteria

Patients of either gender

Patients receiving anti-psychotic therapy for any diseased condition

Exclusion criteria

Pregnant females.

Lactating mothers.

Patients who will be discharged within a day of admission.

Sources of Data

It includes all the relevant documentation and other sources from which the information can be extracted for the further evaluation and comparing the outcomes of the two groups. It includes the following-- Patient's prescription

Patient's case notes

Treatment charts

Interviewing the patient or patient's caretaker.

RESULTS AND DISCUSSION

Socio-demographic of the patients

A total of 50 patients were enrolled in the study from October 2021 to April 2022. The subjects were segregated into 3 major groups as discussed in table 1. The mean age of the subjects was found to be 35.4 years. Moreover, it was observed that 29 males and 21 females were enrolled in the study. The mean age of male population was observed as 36.7 years whereas in female population it was found to be 33.4 years.

The study population was categorized based on the area of domicile and it was observed that out of 50 patients 25 people were from rural areas and 25 were from urban region. As depicted in table 1, most of the study subjects were workers, followed by students, housewives, farmers and businessmen/businesswomen (figure 1)

Table-1: Socio Demographic Profile of Patients

Category 1: Gender

Gender	Total Patients	Percentage
Male	29	48%
Female	21	42%

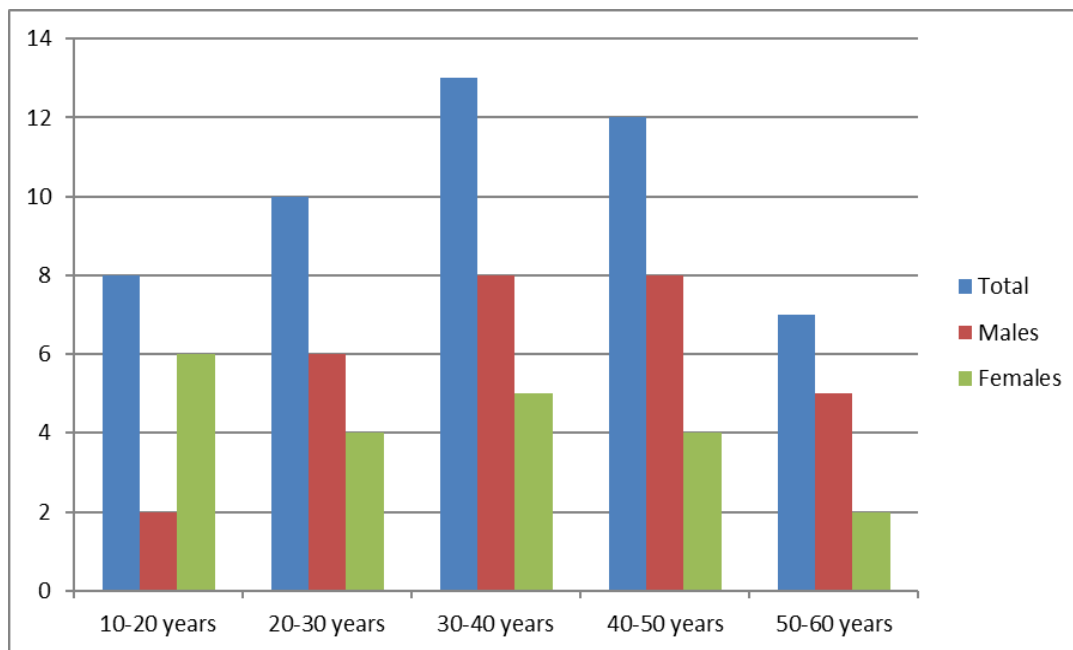
Category 2: Area of Domicile

Area of Domicile	Total Patients	Percentage
Rural	25	50%
Urban	25	50%

Category 3: Occupation

Occupation	Total Patients	Percentage
Housewife	11	22%
Student	12	24%
Worker	13	26%
Business	6	12%
Farmer	8	16%

Figure 1: Gender wise age-distribution



Drug Usage Pattern

Total numbers of drugs prescribed were found to be 244 including the anti-psychotics. The total number of anti-psychotics prescribed was found to be 160. The ratio of anti-psychotics to the total number of drugs was found to be 65.7%. Antipsychotics were the most used drugs (69.6%) followed by multivitamins (7.37%), following them were proton pump inhibitors (5.73%), they were followed by analgesics (5.32%), following analgesics were cognition enhancers (4.9%), cognition enhancers were followed by mood stabilizers (4.09%), mood stabilizers were followed by anti-hypertensives (3.2%) which in turn were followed by anti-

cholinergics (2.04%) and calcium+ vitamin D3 supplements (1.6%) as shown in table 2.

Table 2: Drug Usage Pattern

Medication Category	Total Number	Percentage
Antipsychotics	160	65.57%
Multivitamins	18	7.37%
Proton Pump Inhibitors	14	5.7%
Anti-Hypertensives	8	3.2%
Analgesics	13	5.3%
Anti-Cholinergics	5	2.04%
Cognition Enhancers	12	4.9%
Calcium+ Vitamin D3	4	1.6%
Mood Stabilizers	10	4.09%

Drugs Prescribed for Psychiatric Conditions

A total of 160 anti-psychotics and 12 cognition enhancers were prescribed for various psychiatric conditions. Here are the drugs prescribed-

Table 2(a): Anti-psychotics Prescribed

Anti-psychotics Prescribed	Number	Percentage
Risperidone	12	7.5%
Aripiprazole	14	8.75%
Haloperidol decanoate	8	5%
Olanzapine	6	3.75%
Amisulpride	5	3.125%
Escitalopram	8	5%
Clonazepam	12	7.5%
Lorazepam	14	8.75%
Venlafaxine	10	6.25%
Fluoxetine	9	5.62%
Paroxetine	11	6.87%
Clomipramine	20	12.5%
Lamotrigene	18	11.25%
Carbamazepine	13	8.125%

Table 2(b): Anti-psychotics Prescribed

Cognition Enhancers Prescribed	Number	Percentage
Rivastigmine Tartarate	6	50%
Memantine	4	33%
Donepezil	2	16%

There were total 8 conditions in which anti-psychotics were prescribed empirically. The antipsychotic count according to empirical prescribing was maximum in Cannabis Induced Psychosis (20%) followed by Depression (18%), Panic Disorder (14%) and Bipolar Disorder (12%). Both the conditions namely OCD and Schizophrenia had same number of counts (10%) followed by Dementia and Dissociative Disorder (8%) (Table 3).

Table 3: Various Psychiatric Conditions

Psychiatric Condition	Total Number	Percentage
Cannabis Induced Psychosis	10	20%
Depression	9	18%
Panic Disorder	7	14%
Bipolar Disorder	6	12%
OCD	5	10%
Schizophrenia	5	10%
Dementia	4	8%
Dissociative Disorder	4	8%

Total Medication Cost Rendered Due to Drug Usage

It was observed that total of 9 different drug categories were used during the study. A major proportion of drugs involved the usage of antipsychotics (65.57%) followed by multivitamins (7.37%), proton pump inhibitors (5.7%), analgesics (5.32%), cognition enhancers (4.9%), mood stabilizers (4.09%), anti-hypertensives (3.2%), cognition enhancers (2.07%) and calcium and vitamin D3 supplements (1.6%).

The cumulative cost of 244 drugs was found to be INR 17,279. The average cost of total drugs was found to be INR 71. The cumulative cost of Antipsychotics was found to be INR 8809. The

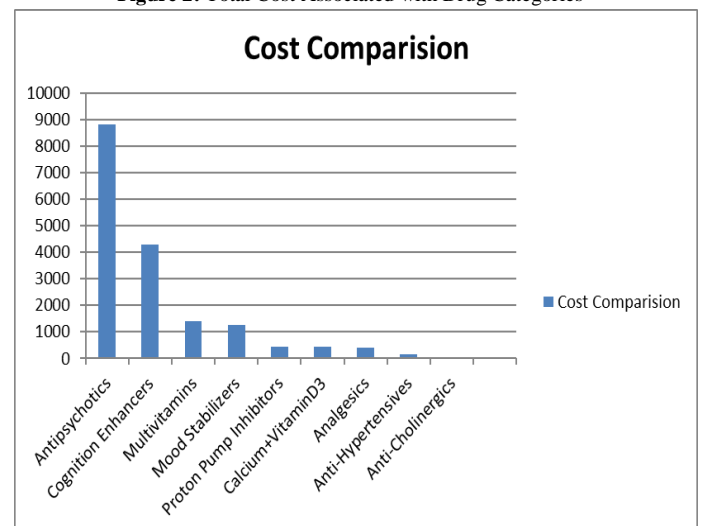
average cost of anti-psychotics was found to be INR 55. The ratio of cost of total drugs to the antipsychotics was found to be 50.9% of the total cost of the medication of a single patient was spent on antipsychotics itself. Thus, it was clear that majority of the medication cost comprised of antipsychotics.

As shown in table 4, we observed that the total cost of drugs used was INR 17,279. The highest cost was associated with the use of antipsychotics (INR 8809; 50.9%). Cognition enhancers being the second (INR 4296; 24.86%), followed by multivitamins (INR 1388; 8.03%), mood stabilizers (INR 1270; 7.35%), proton pump inhibitors (INR 440; 2.54%), calcium+ vitamin D3 supplements (INR 440; 2.54%), analgesics (INR 406; 2.34%), anti-hypertensives (INR 170; 0.98%) and anti-cholinergics (INR 60; 0.34%) the least. (Figure 1).

Table 4: Cost Distribution of Each Drug Category

Drug Category	Cost	Percentage
Antipsychotics	8809	50.9%
Cognition Enhancers	4296	24.86%
Multivitamins	1388	8.03%
Mood stabilizers	1270	7.35%
Proton Pump Inhibitors	440	2.54%
Calcium+ Vitamin D3	440	2.54%
Analgesics	406	2.34%
Anti-Hypertensives	170	0.98%
Anti-Cholinergics	60	0.34%
Total	17,279	100%

Figure 2: Total Cost Associated with Drug Categories



The life expectancy levels have been improving for both male and female population. The improvement among female is better than male population. Sex ratio has improved from 930 in 1961 to 940 in 2011 which is an appreciable movement but is still below international levels [39]. The country has a long way to go before attaining the levels achieved by developed countries (World population prospect) [40]. During 2005 to 2010, the GDP and per capita income increased by 49% and 40% respectively. Human

development index, which is a global index of relative level of human development across countries, has increased from 0.482 to 0.547 [41]. The multidimensional poverty index estimated on the basis of income, consumption, access to resources etc. has improved from 0.313 to 0.283. these indexes are estimated periodically by United nations Development Program [42].

However, the level of poverty in our country has declined only marginally from 28.6% in 2004-2005 to 27.5% in 2010. The period has also witnessed a modest increase in public expenditure in health and education from 3.8% to 4.2% and 4.1% to 4.2% (Human Development Report) [43].

In our study a total of 50 patients were segregated into 4 major groups. The mean age of the subjects was found to be 35.4 years. Moreover, it was observed that 29 males and 21 females participated in the study. The mean age of male population was found to be 36.4 years and in female population it was found to be 33.9 years.

The study population was categorized based on the area of domicile and it was observed that out of 50 patients 25 people were from rural areas and 25 were from urban region. Most of the study subjects were workers, followed by students, housewives, farmers and businessmen/businesswomen [44].

Despite the fact that it was founded 2 decades previously, the hospital has evolved into an include such. Since then, a thorough set of antipsychotic use.

Recommendations have been developed, however compliance with these standards is still weak. As a result, there is a large deal of variation in the antipsychotics used and their combinations. The regimens used by various specializations and super specialties varied as well. It was encouraging to discover that the majority of antipsychotics administered were atypical antipsychotics, which have been shown to have superior therapeutic efficacy in the treatment of psychiatric diseases. This is obviously a positive attitude, and it may reflect practical clinicians' concerns for psychiatric diseases. In this region, cases of psychiatric problems are extremely rare.

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It was observed that total of 9 different drug categories were used during the study. A major proportion of drugs involved the usage of antipsychotics (65.57%) followed by multivitamins (7.37%), proton pump inhibitors (5.7%), analgesics (5.32%), cognition enhancers (4.9%), mood stabilizers (4.09%), anti-hypertensives (3.2%), cognition enhancers (2.07%) and calcium and vitamin D3 supplements (1.6%).

The cumulative cost of 244 drugs was found to be INR 17,279. The average cost of total drugs was found to be INR 71. The cumulative cost of Antipsychotics was found to be INR 8809. The average cost of anti-psychotics was found to be INR 55. The ratio of cost of total drugs to the antipsychotics was found to be 50.9% of the total cost of the medication of a single patient was spent on anti-psychotics itself. Thus, it was clear that majority of the medication cost comprised of antipsychotics.

We observed that the total cost of drugs used was INR 17,279. The highest cost was associated with the use of antipsychotics (INR 8809; 50.9%). Cognition enhancers being the second (INR4296; 24.86%), followed by multivitamins (INR 1388; 8.03%), mood stabilizers (INR 1270; 7.35%), proton pump inhibitors (INR 440; 2.54%), calcium+ vitamin D3 supplements (INR 440; 2.54%), analgesics (INR 406; 2.34%), anti-hypertensives (INR 170; 0.98%) and anti-cholinergics (INR 60; 0.34%) the least.

CONCLUSION

The present work was conducted in the psychiatry ward at Maharishi Markandeshwar (Deemed to be University) hospital which is a tertiary care teaching hospital. The study highlighted the usage pattern of antipsychotics. The percentage of anti-psychotics prescribed were more than half of the total number of drugs prescribed. Atypical anti-psychotics were more commonly prescribed as compared to typical antipsychotics. This shows compliance of doctors to good clinical practices as atypical anti-psychotics have been more efficient in treating psychiatric disorders as compared to typical antipsychotics. Also, there is an increasing tendency of poly pharmacy. Thus, the study concludes that the Drug Utilization Study can help to understand the usage pattern and extra cost rendered by

the patient due to antipsychotics and thus provides a helping hand in the designing of antipsychotic policies.

Conflict of interest:

None

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