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Original Research Article

A cross-sectional observational drug utilisation study of antipsychotic drugs prescribed in patients suffering from psychiatric illnesses at a tertiary care hospital

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ABSTRACT

Background: The rapidly expanding field of psychopharmacotherapy is challenging the traditional concepts of psychiatric treatment and research and is constantly seeking new and improved drugs to treat psychiatric disorders.
Methods: The present study was undertaken to analyse the pattern of drug utilization of antipsychotic medications in outdoor patients of psychiatry department of a tertiary care hospital. 600 prescriptions of 600 patients suffering from different psychiatric illnesses were taken for analyses in which antipsychotic agents were prescribed either as a main drug or as a concomitant agent after proper taking written informed consent.
Results: A total of 1681 drugs were prescribed in our study population The average number of drugs prescribed per prescription in the study population was 2.61±1.32. Schizophrenia, bipolar disorder, depression were among the most common illnesses for which antipsychotics were prescribed. Atypical antipsychotics were most commonly prescribed in the study population out of which olanzapine was prescribed in most of the patients. Considering the cost analysis of the present study, the average cost per prescription was 475.02 INR. Average cost of antipsychotics per prescription was 208.1 INR.
Conclusions: The present study provides valuable insight into the overall pattern of antipsychotic drugs prescribed in patients suffering from different psychiatric illnesses and mental health disorders and the principles of rational prescribing were followed in accordance with the various drug use indicators mentioned by WHO.

Keywords: Antipsychotic, Psychiatric, Psychopharmacotherapy, Rational, Prescribing

INTRODUCTION

The term psychiatric disorder means a mental disorder or illness that interferes with the way a person generally behaves, interacts with others, and functions in his daily life. Psychiatric disorders are also sometimes referred to as mental health disorders or mental health illnesses. They are very common in India. Shame, fear, denial, and other factors may prevent people with psychiatric disorders from seeking help thus constituting its social stigma. However, early treatment and management offers the best chance of regaining the mental health and preventing a disabling disorder in the future. They are likely a combination of genetic factors and environmental factors that come together and trigger a disorder. Education about these factors can be part of an overall treatment plan for psychiatric disorders.[1] Based on predominant manifestations; the mental disorders could be categorized as neurosis, psychoses or affective disorders. Neuroses are not so much a serious disorder.

The personality of the patient is intact and not damaged. There is no loss of contact with reality. Patient knows the causative factors for his anxiety but shows emotional disturbances in the form of exaggerated defense or disproportionate anxiety. In majority of the cases, it is psychoneurosis which is an emotional or behavioural disorder arising from an unresolved conflict at a subconscious level. A psychosis is a type of mental disorder which occurs due to any organic disease or due to any change in the neurotransmitter levels in the brain. The personality of the patient is deranged, and he absolutely loses contact with reality. He has no insight as such into the nature of his own illness, and does incorrect evaluation of his thoughts and feelings, and provides incorrect information about the reality even when they are on the contrary. The manifestations are associated with delusions, illusions, and hallucinations. Psychoses are of two types: organic and functional. Schizophrenia is a functional psychotic disorder.[2]

The rapidly expanding field of psychopharmacotherapy is challenging the traditional concepts of psychiatric treatment and research and is constantly seeking new and improved drugs to treat psychiatric disorders. Although psychotropic medications have had a remarkable impact on psychiatric practice that legitimately can be called revolutionary, their utilization and consequences on real life effectiveness and safety in actual clinical practice need continuous study.[3] Antipsychotics are a class of agents which are able to give relief to the psychotic symptoms in a wide range of conditions like schizophrenia, bipolar disorders, psychotic depression, senile psychosis, various organic psychosis, and drug induced psychosis. The benefits are measured on the basis of drug efficacy in preventing, relieving, and curing disease or else by symptoms and complications.[4] The common antipsychotic groups of drugs used in practice are phenothiazines (chlorpromazine, trifluoperazine), thioxanthenes (flupentixol), butyrophenones (haloperidol), atypical antipsychotics (clozapine, amisulpride, olanzapine), etc.[5]

The world health organization (WHO) addressed drug utilization as "the marketing, distribution, prescription and use of drugs in a society, considering its consequences, either medical, social and economic.[6] Drug utilization research affords a baseline reference points about the effect of adverse interventions in prescribing the concerned drugs. Antipsychotics are a class of agents which are able to reduce psychiatric symptoms in a wide range of conditions like schizophrenia, bipolar disorders, psychotic depression, senile psychosis, various organic psychosis, and drug induced psychosis.[2] The principal aim of drug utilization research is to facilitate the rational use of the drugs. Without the knowledge of how the drugs are being prescribed, it is difficult to suggest the measures to improve prescribing habits and formulate policies and management protocols.[7]

The present study has been undertaken to analyze the pattern of drug utilization of antipsychotic medications in outdoor patients of psychiatry department of a tertiary care teaching hospital. The primary aim of the study was to carry out a drug utilization study of antipsychotic drugs in patients suffering from psychiatric illnesses attending the psychiatry outpatient department of a tertiary care hospital. The objectives were to study the common types of psychiatric illnesses presenting to the psychiatry outpatient department, delineate the various antipsychotic drugs & their classes used in the management of psychiatric illnesses, study the drug prescription pattern of antipsychotic drugs in psychiatric patients with respect to different demographic and medical parameters and other concomitant conditions, study the extent of polypharmacy and drug combinations, and to carry out the cost analysis of the drugs prescribed.

METHODS

The following material and methods were followed while implementing the study. It was a single centric, cross-sectional, observational study conducted in the department of pharmacology in collaboration with the outpatient department of psychiatry in a tertiary care hospital, to evaluate the pattern of antipsychotic drug prescription in the same. 600 prescriptions of 600 patients attending the psychiatry outpatient department in whom antipsychotics were prescribed, were included in the study after taking written informed consent from the patients. The sample size was selected as per the WHO recommendations for conducting drug utilization study (DUS).[8] The study was conducted for a period of 18 months. Patients of age more than 18 years of either gender whose diagnosis suggested a psychiatric illness and in whom antipsychotics were prescribed either as a main agent or as a concomitant drug were taken in the study. Patients of age less than 18 years and not willing to participate or having life threatening acute disease conditions were excluded from the study.

RESULTS

The participants in the study were in the range of 18 to 85 years of age. The average age was 41.21 (±14.52) years. Majority of the participants, 156 (26%) were in the age group of 41-50 years (Table 1).

Table 1: Age distribution of the study population (n=600).

Age (years)	N	%
18-30	147	24.5
31-40	141	23.5
41-50	156	26
51-60	75	12.5
>60	81	13.5
Total	600	100

Out of the 600 participants, 339 (56.5%) were males, and 261 (43.5%) were females (Table 2). The maximum number of males 106 (31.27%) were in the age group 18-30 years. The maximum number of females 77 (29.50%) were in the age group 41-50 years (Figure 1). Majority of the study population 368 (61.33%) belonged to the Hindu religion and were unmarried 330 (55%).

Table 2: Gender distribution of the study population (n=600).

Gender	N	%
Male	339	56.5
Female	261	43.5
Total	600	100

The percentage of unmarried population was greater than that of married. The socio-economic distribution of the study population was evaluated in accordance with the modified Kuppuswamy socio-economic status scale (Figure 2). It was found that the maximum of the population in whom antipsychotics were prescribed belonged to the upper-lower status-288 (48%).[9]

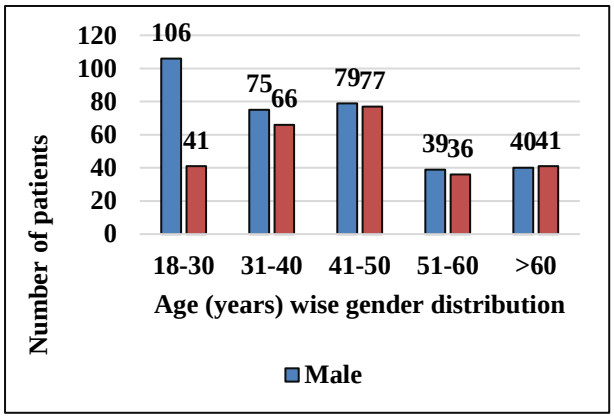

Figure 1: Age wise gender distribution of the study population (n=600).

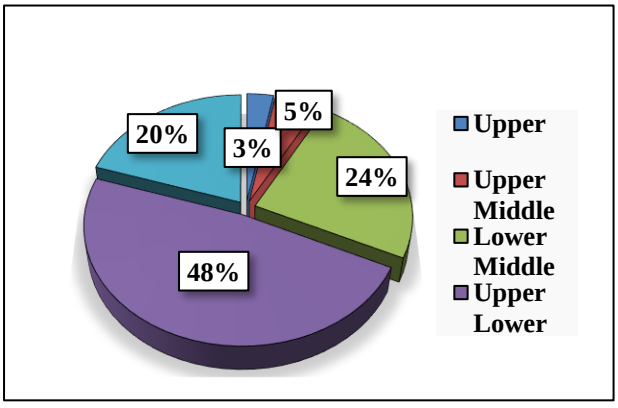

Figure 2: Socio-economic status of the study population (n=600).

Maximum patients, 355 (59.17%) were unemployed and most of them, 445 (74%) came from a nuclear family background. A total of 1681 drugs were prescribed in our study population, out of which 602 (35.81%) were antipsychotics. The average number of drugs prescribed per prescription in the study population was 2.61±1.32 whereas the average number of antipsychotics prescribed in the study population was 1.003±0.06. In the present study, out of the 602 antipsychotics prescribed in the study population, 93 of them belonged to Phenothiazines group. Among the Phenothiazine group, the piperazine subgroup was the more common one to be prescribed in the study population. Atypical antipsychotics: 426 (70.76%) were the most commonly prescribed antipsychotic drugs in the study population (Figure 3).

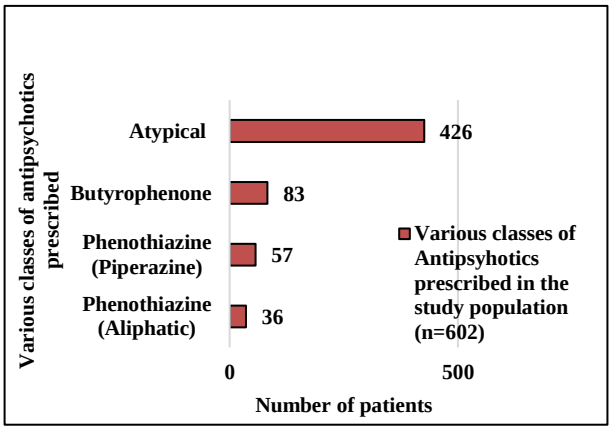

Figure 3: Analysis of the various classes of antipsychotics prescribed in the study population (n=602).

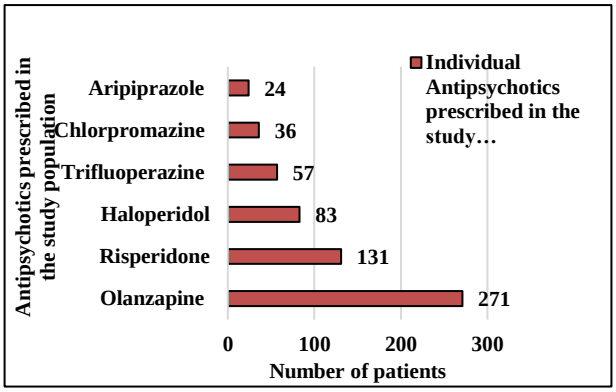

Figure 4: Analysis of the individual antipsychotics prescribed in the study population (n=602).

Out of the atypical antipsychotics prescribed, it was noted that Olanzapine: 271 (45.02%) has been prescribed most commonly in them (Figure 4). 528 (87.71%) of them have been prescribed as monotherapy in the study population. In the present study it has been found that among the 600 participants taken in the study, the most common condition that they have been diagnosed with in which the antipsychotics have been prescribed is Schizophrenia: 206 (34.33%) (Figure 5). Considering the psychotropic drugs in the present study population, out of the 445 psychotropic drugs prescribed other than the

antipsychotics in the study population, antidepressants: 173 (38.87%) are the most common to be prescribed in them. On segregating them into individual drugs the result that was noted that Trihexyphenidyl: 161 (36.17%) was the most common to be prescribed in them. In the present study, out of the 109 drugs prescribed as fixed dose combination (FDC) in the study population the most commonly prescribed in them was the combination of trifluoperazine+trihexyphenidyl: 74 (67.89%). The cost analyses of the prescriptions have been evaluated and depicted in the following table (Table 3). The WHO/INRUD (The International network for rational use of drug) indicators have also been evaluated and depicted in the following table (Table 4). The present study yielded the prescribed daily dose (PDD)/daily defined dose (DDD) ratio of the prescribed drugs which showed that majority of the drugs i.e., 18 had PDD/DDD ratio of <1 followed by 7 drugs whose PDD/DDD ratio was >1. 7 drugs had PDD/DDD ratio of 1. The range was 0.33-2.

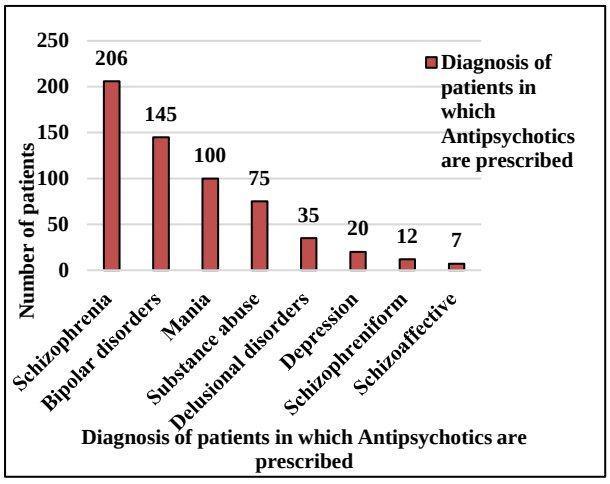

Figure 5: Diagnosis of the study population in whom antipsychotics are prescribed (n=600).

Table 3: Cost analysis of the prescriptions of the study population.

Parameter	Values
Average cost per prescription	475.02 INR
Average cost of antipsychotics per prescription	208.1 INR
Percentage of cost borne by hospital	76.64%
Percentage of cost borne by patient	23.36%

DISCUSSION

Drug utilization studies play a crucial role in the health sector and ultimately provide insight into the efficiency of drug use and results of such research can be used to help set priorities for the rational use of medicines and allocation of health care budgets. These are practically appreciated in different clinical settings, health care management programs, hospitals, and communities by considering therapeutic drug class and disease conditions to assess the fundamental part of the patient care system.[10] These studies or audits thus ensure correct and rational use of drugs and are useful to identify the problems and provide feedback to prescribers so as to create awareness about the rational use of drugs.[11] The present study is a cross-sectional, observational study conducted in department of pharmacology in collaboration with department of psychiatry in a tertiary care hospital. In this study, 600 prescriptions of 600 patients suffering from psychiatric illnesses in whom antipsychotics were prescribed were assessed. In our study, all the patients were above the age of 18 years with a range of 18 to 85 years. The average age was 41.21 (±14.52) years. Majority of the participants, 156 (26%) were in the age group of 41-50 years. The finding was in accordance with a study conducted by Kumar., et al., in which he found that the majority of the patients in whom antipsychotics were prescribe belonged to age group 31-40 years (31.4%) followed by 18-30 years (28.6%) and 41-50 years (27.5%).[12]

Table 4: WHO/INRUD drug use indicators.

Parameters	Value
Average number of drugs per encounter	2.61±1.32
Percentage of drugs prescribed by generic name	80.79%
Percentage of encounter with an antibiotic prescribed	0
Percentage of encounter with an injection prescribed	0
Percentage of drug prescribed from hospital formulary	56.99%
Percentage of drugs prescribed from National List of Essential Medicines, 2015	42.41%
Percentage of drugs prescribed from WHO essential drug list, 2021	30.64%

It can be seen in the present study that the overall prevalence of the population is falling in the age category range of 30-50 years. This can be because majority of the patients who are coming to our tertiary care hospital OPD, may be coming from long back but the time when we have taken them or have enrolled them in our study, and we took their prescription in account, it might be possible that they must have crossed this age limit category. So, it might be one factor to differ slightly from other study findings. Apart from that there are other things that the patients who are coming to our tertiary care hospital, they may be suffering from drug induced psychosis or other factors which are commonly seen in the late phase of life because of which the maximum number of patients in our study are falling in the age category of 41-50 years. But overall, the most common age group in which the patients are seen suffering from psychiatric illnesses is 30-50 years, but these biases should also be considered while doing any study related with the same topic or content. The present study findings

were consistent with the findings of these studies and indicate that the males are more prone to suffer from psychiatric illnesses as compared to females which may be because of the fact that men's issues often stem from societal expectations and traditional gender roles, which may lead them to think that they must be bearing the sole responsibility of breadwinners in the family, display traditional "masculine" traits, such as strength and control, rely on oneself and not seek help from others and also not being able to speak openly about their emotions. Holding on to these traditional beliefs can negatively impact men's mental health and keep them from accessing support and treatment.[13] It was noted that majority of the patients from the study population belonged to the unmarried group which can be attributed to the fact that due to the illness people with schizophrenia and other mental conditions choose not to get married as it can cause adjustment problems for the partner and for themselves too and such patients could find difficulty in role expectation in terms of social, emotional, moral, and sexual aspects.[14] The maximum number of patients belonging to the upper – lower socio-economic status group can be attributed to the factors like social disadvantages including poverty, discrimination, unemployment, family dysfunction and poor housing conditions, which are high risk factors for schizophrenia and other psychiatric illnesses.[15]

It is found that most of patients belonged to the unemployed group in whom antipsychotics were prescribed. It can be attributed to the fact that persons suffering from schizophrenia and other psychiatric illnesses are having impairment in vocational ability and lack of adequate social competence and necessary social skill in workplace.[16] Majority of the study population belonged to the nuclear families. On the other hand, big, interconnected, and extended families, help in protecting the most vulnerable people in society from the shocks of life, in comparison to the smaller, detached nuclear families (a married couple and their children). The joint family gives the most privileged people in society room to maximize their talents and expand their options. The shift from bigger and interconnected extended families to smaller and detached nuclear families ultimately led to a familial system that liberates the rich and ravages the working-class and the poor and make them susceptible to a wide number of various psychiatric conditions.[17]

Atypical antipsychotics: 426 (70.76%) were the most commonly prescribed antipsychotic drugs prescribed in the study population. Using more atypical antipsychotics can be attributed to the fact that these group of drugs have a unique receptor affinity profile, they have more effect on the positive symptoms of Schizophrenia, more effective on patients refractory to typical antipsychotics. They have lesser tendency to produce extrapyramidal rigidity due to their lower affinity for D_1 and D_2 receptors. They competitively inhibit D_4 receptors and have a strong affinity for $5HT_{2A}$ receptors.[2] The data corresponded to a study conducted by Ghosh et al in which he found that the atypical antipsychotics were among the most commonly prescribed (87.06%) in the study population. It is therefore seen that most of the studies favor the usage of atypical antipsychotics. In the governmental sector however, the majority of patients who are receiving typical antipsychotic medications are usually denied access to the newer atypical drugs until they have failed to respond to or tolerate conventional treatments. This pattern of usage is not due to unavailability of atypical antipsychotics, rather, it might be due to the cost difference between the typical and atypical antipsychotics.

Finally, it was seen that, prescription containing typical antipsychotic drugs also contained anticholinergic agent due to protective effect against extrapyramidal side effects of the neuroleptic drugs. Trihexyphenidyl was the only anticholinergic drug prescribed in the present study. This underutilization of the protective anticholinergic medications to be co-prescribed with typical antipsychotics increases the risk of extrapyramidal side effects and other toxicities.[18] Out of the 602 antipsychotics prescribed in the present study population, it is noted that olanzapine: 271 (45.02%) has been prescribed most commonly in the study population followed by Risperidone. The data corresponded to a study conducted by Ghosh et al in which he found that the maximum prescribed antipsychotic prescribed in the study population (n=545) was olanzapine (77%), followed by Risperidone (8.26%).[18]

It can therefore be inferred from the present study and other corresponding studies that olanzapine is the one of the most commonly used antipsychotic agent being used for the management of the various psychiatric illnesses. Further information is attributed to the fact that it has been shown in numerous large trials to be as equally effective as haloperidol in the acute treatment and maintenance treatment of schizophrenia. However, olanzapine was shown to be more effective than haloperidol in the treatment of negative symptoms and to cause significantly fewer extrapyramidal symptoms. Furthermore, early reports suggest that olanzapine produces less tardive dyskinesia than haloperidol, though longer follow-up data are required. Also, at the same time, it depends on certain conditions upon which the antipsychotic prescription depends. Olanzapine causes a greater degree of weight gain than risperidone.[19] The most commonly diagnosed condition in which antipsychotics have been prescribed in the study population is Schizophrenia. However, following that the different conditions in which they are prescribed may vary in accordance with different factors of the patient while following the protocol of management of psychiatric illnesses. Also, it is to be noted that in the present study the diagnosis has been made based on the history and examination of the patient presenting to the outpatient department at that particular point of time.

The cost has been calculated per day, for all the drugs that were encountered in the prescription. The difference between the cost borne by the patient and that by the hospital was pretty much significant which might be attributed to the fact that the patient received generic drugs as well as few of the branded drugs from the stock which was available from the hospital pharmacy store. These drugs were provided free of cost to the patients that reduced the overall economic burden on the patient. This being a government hospital, the majority of the patients that come here are of low social-economic background, thus receiving medicine free of cost which helps improve the compliance of the treatment and encourages them for regular follow up to refill their prescriptions. It is important to note that the PDD can vary according to both the illness treated and national therapeutic practices. The PDDs also vary substantially between different countries, for example, PDDs are often lower in Asians than in Caucasian populations. Because of this, it may seem as if there is an underutilization of a particular drug as per the PDD/DDD ratio. Also, the DDDs obtained from the WHO ATC/DDD website are based on international data and are applicable for the management of conditions of moderate intensity. The WHO encourages countries to have their own DDD list based on indigenous data. The ATC classification system divides drugs into different groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties.[20]

Limitations

The present research was limited by the size and site of the study population, so the results obtained could not be generalized for the entire community. A larger sample size and that too, from different sites and locations, can give a better and more reliable outcome. Since the study was conducted in an urban tertiary care hospital, the data collected represents the prescribing pattern in an urban area which cannot reflect healthcare facilities available to all health centres, particularly in the rural areas.

CONCLUSION

The present study provides valuable insight into the overall pattern of antipsychotic drugs prescribed in patients suffering from different psychiatric illnesses and mental health disorders and the principles of rational prescribing were followed in accordance with the various drug use indicators mentioned by WHO.

Recommendations

The study gives the following recommendations that could help improve the prescription pattern of antipsychotic drugs for the treatment of various psychiatric illnesses in which the treatment of psychiatric illness being long-term based, it is important to educate the patients on the importance of following the recommended schedule of treatment including the follow-up visits. This will help in monitoring the effectiveness of the antipsychotic medication as a whole as well as the dose of different drugs that can be individualized in patients depending upon their response which may differ from patient to patient.

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