



**ANTIPSYCHOTIC DRUG PRESCRIBING PATTERNS FOR
SCHIZOPHRENIA IN A UNIVERSITY TEACHING HOSPITAL**

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ABSTRACT

The aim of the study was to determine the antipsychotic drug prescribing patterns in patients with schizophrenia in the in-patient department of a tertiary care teaching hospital. 200 patients between the age group of 18-60 and diagnosed to have schizophrenia were enrolled in the study. Male patients (62.5%) outnumbered the female patients (37.5%). Majority of the patients 62% (N=124) were found to be suffering from Paranoid Schizophrenia followed by 16% (N=32) of patients identified with Unspecified Schizophrenia. Atypical antipsychotics are commonly found to be prescribed which includes

olanzapine (45.5%), risperidone (35%) and clozapine (25%). Injectable form of haloperidol (40.5%) was the widely used conventional anti-psychotic preparation followed by zuclopenthixol (20.5%) and chlorpromazine (5.5%). Most commonly prescribed anxiolytic drugs constitute the benzodiazepine (injectable form of lorazepam-39.5%). Trihexyphenidyl hydrochloride (34.5%) was the commonly prescribed anticholinergic drug. From the prescription pattern of antipsychotics, it is concluded that atypical antipsychotics were used more frequently than the typical antipsychotics. Among the atypical antipsychotic drugs, olanzapine was the most frequently prescribed drugs in the management of schizophrenia.

KEY WORDS: Schizophrenia, antipsychotics, prescribing patterns.

INTRODUCTION

Schizophrenia is a persistent heterogeneous syndrome of disorganized and bizarre thoughts, delusions, hallucinations, inappropriate affect, cognitive deficits, and impaired psychosocial functioning. ^[1] Drug therapy can relieve many symptoms of schizophrenia, but the majority of people who have the disorder live with symptoms throughout their lives. Nevertheless, many people with schizophrenia can lead gratifying and meaningful lives in their communities. ^[2] The emergence of newer atypical antipsychotics has directed to the practice of polypharmacy and has changed the patterns of drug prescribing in schizophrenia. ^[3] Drugs are used for the management of acute episodes, prevention of relapses and recurrences, and improvement of symptoms temporarily. Antipsychotic agents are the mainstay of treatment with antidepressants, mood stabilizers and anticholinergics being useful adjuncts. ^[4] Several guidelines may exist for rational prescription for schizophrenia. However, prescribing in real-world practices often diverges from suggested guidelines. ^[5-7] Our study defines the antipsychotic drug usage patterns in patients with schizophrenia admitted in a psychiatric unit of a tertiary care teaching hospital.

MATERIALS AND METHODS

It was a prospective observational study conducted at a 1200 bed private tertiary care hospital located in Dakshina Kannada district. In-patients aged above 18 years diagnosed with schizophrenia and admitted to the psychiatry department during the study period were enrolled after getting approval from Institutional Ethics Committee. The patient's case records were reviewed daily. Information's regarding demography details, antipsychotic drug therapy (drug name, dosage form, frequency, route of administration, duration of treatment) were documented in the suitably designed data collection form. The collected data were analyzed using SPSS software version 16.0.

RESULTS AND DISCUSSION

During the study period we have enrolled 200 patients. Male patients (62.5%) outnumbered the female patients (37.5%) (Table-1). This finding resembles a study report that was conducted in Bangladesh which tells that males suffer more when compared with females. ^[8] However, this finding is different from a study done in Australia by Mant *et al.* which reported that the illness is more common among female patients. ^[9]

Table 1. Sex wise distribution of enrolled patients under study

Sex	N=200	%
Male	125	62.5
Female	75	37.5

Most of the patients (34.5%) were in the age group of 21-30 years which shows the burden of illness highly in the adult population (Table-2). A recent Indian study also reported that the commonest age group among these patients was below 30 years. ^[10] But a study by Maki et al reported that schizophrenia is commonly prevalent among the adolescents. ^[11]

Table 2. Age wise distribution of patients under study

Sl. No	Age groups	N=200	Percentage (%)
1	18-20	10	05.0
2	21-30	69	34.5
3	31-40	64	32.0
4	41-50	38	19.0
5	51-60	19	09.5

Majority of the patients 62% (N=124) were found to be suffering from paranoid schizophrenia followed by 16% (N=32) of patients identified with unspecified schizophrenia. The remaining patients were diagnosed to have other types of schizophrenia like hebephrenic, catatonic, residual and undifferentiated schizophrenia (Table 3).

Table 3. Types of schizophrenia in the study population

Sl. No	Schizophrenia types		
	Type	N= 200	%
1	Paranoid	124	62.0
2	Unspecified	32	16.0
3	Undifferentiated	26	13.0
4	Residual	8	04.0
5	Hebephrenic	7	03.5
6	Catatonic	3	01.5

A total of 38 psychotropic drugs were prescribed during the study period. The different drug classes prescribed for the schizophrenic patients were typical antipsychotics, atypical antipsychotics, antidepressants, anticholinergic, anxiolytic drugs, mood stabilizers and sedatives.

Atypical antipsychotics are commonly found to be prescribed which includes olanzapine (45.5%), risperidone (35%) and clozapine (25%). During the past two decades, there has been

a shift in prescribing atypical antipsychotics. Several factors that may be responsible for this change are a lower reported incidence of extrapyramidal symptoms (EPS) and tardive dyskinesia (TD), intensive focus on research and education about atypical antipsychotics, intensive promotion of newer drugs by pharmaceutical companies and physicians tendency to try something new expecting better outcomes. ^[12] Related studies have shown that second-generation antipsychotics were the most commonly prescribed antipsychotic medication. ^[13,14]

Injectable form of haloperidol (40.5%) was the widely used conventional anti-psychotic preparation followed by zuclopenthixol (20.5%) and chlorpromazine (5.5%). We have observed the less utilization of typical antipsychotics when compared with the atypical ones. A study conducted by Ramadas et al also shows that only 10% of patients were prescribed typical antipsychotic drugs. ^[15]

Anxiolytic drugs are the commonly preferred adjuvant medication with the antipsychotic drug therapy. Injectable form of lorazepam (39.5%) followed by lorazepam tablets (28.5%) and clonazepam (7%) were the commonly prescribed anxiolytics. Benzodiazepines usually considered as safe drugs and have the possibility of addiction on long term use and can lead to falls particularly in the elderly. With the long term use, the adverse effects such as memory impairment, depression, tolerance and dependence outweigh the benefits. There have been reports of increased mortality among those patients prescribed these drugs. ^[16] The guidelines recommend for their use for short term or intermittent courses in minimum effective doses. ^[17]

Anticholinergic drug with typical antipsychotic drug therapy was also frequently noticed. Trihexyphenidyl hydrochloride (34.5%) was the commonly prescribed drug followed by intravenous promethazine. Reports on the real-time use of anticholinergic drugs reflect their reduced usage with the increasing use of newer atypical antipsychotics. Similar to our findings, patients were receiving antiparkinsonian medication in the studies conducted in two different hospitals ^{18,19} and multinational centers. ^[20] These drugs are still widely prescribed, despite the suggestions that only 10 to 33% of patients require these drugs once antipsychotic maintenance medication had been established. ^[21,22]

Among the drugs that are used as mood stabilizers divalproex sodium was most commonly prescribed followed by lithium, oxcarbazepine and carbamazepine. Kessing et al in a study

reported that lithium was superior to valproate. ^[23] As Lithium (Li⁺) has the low therapeutic index, periodic determination of serum concentrations is crucial²⁴. Related psychotropic drug utilization studies have also reported a similar finding. ^[25,26]

Escitalopram and Fluoxetine are the commonly prescribed antidepressant drugs in the study population. The 2011 NICE guidelines state that in the management of anxiety disorders SSRIs or Serotonin Norepinephrine Reuptake inhibitors (SNRIs) should be the first choice. Benzodiazepines should not be preferred and can be used only for short term in case if there is a specific need. ^[27,28]

Zolpidem, the drug which has the property of sedative and hypnotic was also noticed in a prescription. A study by Mastain et al explained about a case of reproducible relief of a catatonic syndrome with zolpidem. ^[29] Thomas and his co-workers also reported the clinical changes that confirmed the improvements of catatonia condition after managing with zolpidem. ^[30]

The detailed information on the utilization of drugs are depicted in (Table 4 & 5)

Table 4. List of Drugs Prescribed for Schizophrenic Patients

Sl.No	Drug Name	No of patients receiving the drug	%
1	T.Olanzapine	91	45.5
2	Inj. Haloperidol	81	40.5
3	Inj Lorazepam	79	39.5
4	T.Risperidone	70	35.0
5	Trihexyphenidyl Hydrochloride	69	34.5
6	T.Lorazepam	57	28.5
7	T. Clozapine	50	25.0
8	Inj.Zuclopenthixol	41	20.5
9	T.Risperidon+Trihexyphenidyl	38	19.0
10	T.Amisulpride	21	10.5
11	T.Divalproex Sodium	16	08.0
12	T.Clonazepam	14	07.0
13	Inj. Promethazine	13	06.5
14	T. Quetiapine	10	05.0
15	T.Chlorpromazine	11	05.5
16	T.Aripiprazole	8	04.0
17	T.Escitalopram	7	03.5
18	T.Fluoxetine	5	02.5
19	T.Trifluoperazine	4	02.0
20	T.Asenapine	4	02.0

21	Inj.Fluphenazine	3	01.5
22	T.Lithium	3	01.5
23	T.Levosulpride	2	01.0
24	T.Sertraline	2	01.0
25	Inj.Flupenthixol	2	01.0
26	T.Amitriptyline	2	01.0
27	T.Oxcarbazepine	2	01.0
28	T.Trifluoperazine+Trihexyphenidyl	2	01.0
29	T.Dosulepin	2	01.0
30	T.Imipramine	1	0.5
31	T.Haloperidol	1	0.5
32	T.Alprazolam+Sertraline	1	0.5
33	T.Diazepam	1	0.5
34	T.Alprazolam	1	0.5
35	T.Carbamazepine	1	0.5
36	T.Chlorpromazine+Trihexyphenidyl+T rifluoperazine	1	0.5
37	T.Procyclidine	1	0.5
38	T.Zolpidem	1	0.5
Total		718	

T: Tablet, Inj: Injection

Table 5. Prescribing Prevalence of Individual Psychotropic Drugs

Drug Class	Drug	No of patients receiving the drug	Percentage
Antipsychotics (Atypicals)	T.Olanzapine	91	45.5
	T.Risperidone	70	35.0
	T. Clozapine	50	25.0
	T.Amisulpride	21	10.5
	T. Quetiapine	10	05.0
	T.Aripiprazole	8	04.0
	T.Asenapine	4	02.0
Antipsychotics (Typicals)	T.Levosulpride	2	01.0
	Inj. Haloperidol	81	40.5
	Inj.Zuclopenthixol	41	20.5
	T.Chlorpromazine	11	05.5
	T.Trifluoperazine	4	02.0
	Inj.Fluphenazine	3	01.5
	Inj.Flupenthixol	2	01.0
Anxiolytic drugs	T.Haloperidol	1	0.5
	Inj Lorazepam	79	39.5
	T.Lorazepam	57	28.5
	T.Clonazepam	14	07.0
	T.Alprazolam	1	0.5
Anticholinergic	T.Diazepam	1	0.5
	Trihexyphenidyl Hydrochloride	69	34.5

	Inj. Promethazine	13	06.5
	T.Procylidine	1	0.5
Mood stabilizers	T.Divalproex Sodium	16	08.0
	T.Lithium	3	01.5
	T.Oxcarbazepine	2	01.0
	T.Carbamazepine	1	0.5
Anti-Depressants	T.Escitalopram	7	03.5
	T.Flouxetine	5	02.5
	T.Sertraline	2	01.0
	T.Dosulepin	2	01.0
	T.Amitriptyline	2	01.0
	T.Imipramine	1	0.5
Sedative and Hypnotics	T.Zolpidem	1	0.5

We have observed that a fixed dose combination of risperidon with trihexyphenidyl was the most commonly prescribed drug followed by trifluoperazine with trihexyphenidyl. Trihexyphenidyl was preferred to counter the extrapyramidal adverse effects of antipsychotics. Some researchers have mentioned that the addition of anticholinergic medication can aggravate existing tardive dyskinesia, and by withdrawing anticholinergic drugs may improve the condition. ^[31,32] Lahon, et al mentioned in a pharmacoepidemiological study that fixed dose combination of antipsychotic drugs are not found to be prescribed. ^[33] The details of current study are listed in (Table 6).

Table 6. Fixed drug combinations prescribed during the study period

Sl. No	Fixed drug combinations	Frequency	%
1	T.Risperidone+Trihexyphenidyl	38	19
2	T.Trifluoperazine+Trihexyphenidyl	2	1
3	T.Chlorpromazine+Trihexyphenidyl+Trifluoperazine	1	0.5
4	T.Alprazolam+Sertraline	1	0.5

Injectable drugs are more often prescribed during the therapy. It was observed that haloperidol was the highly prescribed drug followed by lorazepam and zuclopenthixol. Injections of haloperidol and zuclopenthixol were administered as an emergency intervention to treat acute psychotic states and also administered as antipsychotic maintenance treatment to ensure compliance. A survey in UK reported that 90% of clinicians use parenteral antipsychotics for rapid tranquilization. ^[34] The details are listed in (Table 8)

Table 8. Injectable drugs prescribed during the study period

Sl.No	Injectable drugs	Frequency	%
1	Inj. Haloperidol	81	40.5
2	Inj Lorazepam	79	39.5
3	Inj.Zuclopenthixol	41	20.5
4	Inj. Promethazine	13	6.5
5	Inj.Fluphenazine	3	1.5
6	Inj.Flupenthixol	2	1

The findings from this study show that Second Generation Antipsychotics (SGAs) alone (40.70%) are prescribed more when compared with other antipsychotic combinations. Similarly, Keks et al, who audited a community psychiatric service in Australia and found 53% of the prescriptions of antipsychotics to be SGAs. ^[35] An outpatient's prescription study in patients with schizophrenia in Korea found that 88.1% of 825 patients received SGAs alone. ^[36] In contrast, a study conducted in Thailand by Udomratn et al reported that First Generation Antipsychotics (FGAs) alone are still prescribed that may be because of the cost and availability. We also observed high frequency prescriptions of SGA+FGA,SGA+SGA and many more. The details are presented in Table 9.

Table 9. Types of antipsychotic regimens used in the patients treated for schizophrenia

Sl. No	Category	Frequency	%
1	One SGA	113	39.64
2	SGA+FGA	84	29.47
3	SGA+SGA	46	16.14
4	SGA+SGA+FGA	21	7.36
5	SGA+FGA+FGA	12	4.21
6	SGA+SGA+SGA	5	1.75
7	FGA	3	1.05
8	FGA+FGA	1	0.35
	Total	285	

Abbreviations: FGA First Generation Antipsychotics, SGA Second Generation Antipsychotics

CONCLUSIONS

By studying the case sheets of enrolled patients we understand the prescription patterns and changes in the prescribing trends among psychiatrists. It is concluded that atypical antipsychotics were used more frequently than that of typical antipsychotics. Among the atypical antipsychotic drugs there is a tendency of using olanzapine during the management of schizophrenia when compared to other atypical antipsychotic drugs in the hospitalized

patients. The study also revealed that polypharmacy with concomitant multiple neuroleptics, additional anticholinergics and other psychotropic drugs is an international phenomenon.

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