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## A STUDY ON PRESCRIBING PATTERN OF ANTIPSYCHOTICS IN SCHIZOPHRENIA AT A TERTIARY CARE HOSPITAL

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**ABSTRACT: Introduction:** Schizophrenia is a chronic and debilitating psychiatric illness affecting around 0.4% to 1.4% of people at some point in their life. Early onset and the chronic course make schizophrenia a worrying disease. Prescribing pattern in Schizophrenia has seen a significant shift in the last two decades, from the first generation to second-generation antipsychotics. This study was carried out to analyze the pattern of antipsychotic drug utilization in patients of schizophrenia presenting at an outpatient department of a tertiary hospital. **Materials and Methods:** A cross-sectional observational study was conducted at the psychiatry outpatient department of a tertiary care hospital for six months. Diagnosis of Schizophrenia was made according to DSM - 5 criteria. Prescriptions were analyzed for demographic details, and the psychotropic prescribing pattern was studied using WHO indicators. **Results:** Amongst 104 prescriptions, 59.61% were males, and 68.20% of study subjects were below 40 years. 95.96% prescriptions were of atypical antipsychotics, Risperidone being the most commonly prescribed (52.88%), followed by Olanzapine (28.84%). Antipsychotic polypharmacy was noted in 19.23% of the prescriptions. Concomitant anticholinergics were used in 64.42%. Majority of the prescriptions were written in generic names. Risperidone which was used often in the study is included in the NLEM 2015 of India. **Conclusions:** Socio-demographic aspects of schizophrenia patients showed that the disease is more prevalent in males and people under 40 years age. Anticholinergic use is normally recommended only in select patients, in contrast to the current study population which had several of the patients on it.

**INTRODUCTION:** Schizophrenia is one of the most common psychiatric disorders, estimated to affect 0.4% to 1.4% <sup>1, 2</sup> of the population. It has a mean annual incidence of 11-16 per 100,000 <sup>1, 3</sup>. It affects men and women equally; however, there is an earlier onset in males <sup>4</sup>.

Early onset and the chronic course make schizophrenia a worrying disease. Timely treatment reduces the morbidity and mortality of the disease. Advances in psychopharmacology have revolutionized the practice of psychiatry. Antipsychotic medications are primarily indicated for the treatment of schizophrenia and other psychotic disorders.

They have traditionally been categorized as first-generation antipsychotics (FGAs) (otherwise known as 'typical' or 'conventional') and second-generation antipsychotics (SGAs) (otherwise 'atypical' antipsychotics).

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The burden of side effects associated with FGAs, debilitating extrapyramidal side effects (EPSEs) in particular, led to the introduction of the SGA medications in the 1990s<sup>5</sup>. A prescription based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of physician<sup>6</sup>. Drug utilization focuses on factors related to prescribing, dispensing, administering and taking of medication and its associated events. Patient files and computer registries are widely used as instruments for collecting information on drugs<sup>7</sup>. It plays a key role in helping the healthcare system to understand, interpret and improve the prescription, administration, and use of medications whose principal aim is to facilitate the rational use of drugs<sup>8</sup>. Hence, the present study was carried out to observe the prescribing pattern of antipsychotics in tertiary care hospital, assess the rationality of the prescriptions and the prevalence of antipsychotic usage in the community.

**MATERIALS AND METHODS:** This was a cross-sectional observational study which was carried out over six months (January 2018 to June 2018) at the Psychiatry outpatient department at Gitam Institute of Medical Sciences and Research Hospital, Visakhapatnam, Andhra Pradesh. After approval GIMSR/Adm/Ethics/approval/14/2017 from the Institutional Ethics Committee, patients attending psychiatry outpatient department during the study period and diagnosed as schizophrenia according to DSM - 5 criteria were identified, and their drug prescribing pattern was studied. Prescriptions of patients of both sexes and all ages, suffering from schizophrenia and started on at least one antipsychotic drug were included in the study.

Patients of epilepsy, suicidal tendencies, mental retardation, substance abuse, patients who were pregnant or lactating, and cases where the diagnosis was uncertain were excluded from the study. The diagnosis was made according to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition, (DSM 5) criteria<sup>9</sup>. A pre-designed and pre-tested proforma was used to collect the required information. Patient-related information (age, sex, diagnosis) and drug-related information (name of the drug, dosage form, and route of administration) were recorded. WHO guidelines were taken into consideration for evaluating drug use indicators<sup>10</sup>.

<sup>11</sup>. Each prescription given to the patient was analyzed according to the World Health Organization (WHO) core prescribing indicators. To preclude any potential bias, the disclosure of the name of the responder was made optional. The obtained data were analyzed by using MS excel 2007, and the findings were summarized by using tables and diagrams.

**RESULTS:** **Table 1** represents the socio-demographic profile of participants. Of the total 104 cases analyzed, 59.61% were males, and 68.20% were below 40 years of age. Among all the antipsychotic drugs, Risperidone was the most commonly prescribed antipsychotic drug (52.88%) **Table 2**.

**TABLE 1: DEMOGRAPHICAL PROFILE OF PATIENTS**

Categorical variable	n (%)
Age	
<40	71 (68.20)
>40	33 (31.80)
Gender	
Male	64 (59.61)
Female	40(40.39)

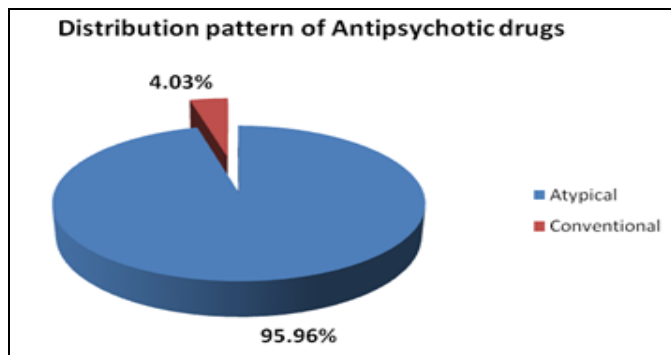
**TABLE 2: PRESCRIBING FREQUENCY OF ANTIPSYCHOTIC DRUGS**

Antipsychotic drug	No of times Prescribed (N=104) (%)
Risperidone	55 (52.88)
Olanzapine	30 (28.84)
Quetiapine	11 (10.57)
Amisulpride	8 (7.69)
Aripiprazole	9 (8.65)
Lurasidone	4 (3.84)
Haloperidol	3 (2.88)
Chlorpromazine	1 (0.96)
Trifluoperazine	1 (0.96)
Depot Antipsychotic	2 (1.92)

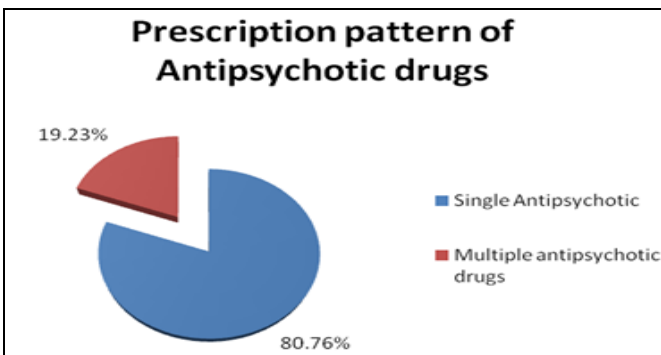
**Fig. 1** represents that the majority of the study subjects were prescribed atypical antipsychotic drugs. Regarding prescription pattern, monotherapy (80.76%) was more preferred than combination therapy in the present study **Fig. 2**. Out of 20 patients receiving multiple antipsychotics during the study period, 80% received more than one atypical antipsychotic drugs **Fig. 3**. **Fig. 4** showing concomitant medications prescribed with Antipsychotics, shows that 64.42% of study subjects were also prescribed Anticholinergic drugs. The ATC coding, calculation of DDD, PDD and PDD to DDD ratios were summarized in **Table**

3. By WHO core prescribing indicators, the present study results observed that the average number of drugs per prescription was 2.23. The percentage of

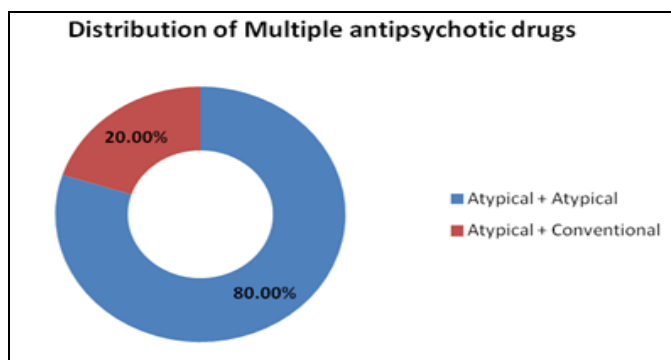
antipsychotic drugs prescribed from the national list of essential medicines (2015) was 42.85% **Table 4.**



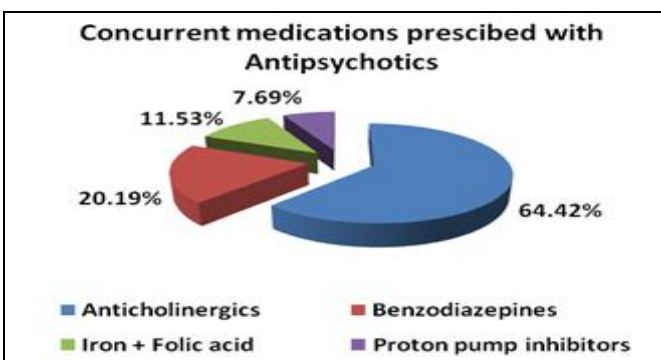
**FIG. 1: DISTRIBUTION PATTERN OF ANTIPSYCHOTICS DRUGS**



**FIG. 2: PRESCRIPTION PATTERN OF ANTIPSYCHOTIC DRUGS**



**FIG. 3: DISTRIBUTION OF MULTIPLE ANTIPSYCHOTIC DRUGS**



**FIG. 4: CONCURRENT MEDICATIONS PRESCRIBED WITH ANTIPSYCHOTICS**

**TABLE 3: ATC/DDD CLASSIFICATION WITH PDD VALUES OF PRESCRIBED ANTIPSYCHOTICS AND PDD/DDD RATIO**

Drug name	ATC code	DDD	PDD	PDD/DDD
Risperidone	N05AX08	8 mg	3.75 mg	0.46
Olanzapine	N05AH03	10 mg	12 mg	1.2
Quetiapine	N05AH04	400 mg	163 mg	0.4
Amisulpiride	N05AL05	400 mg	350 mg	0.88
Aripiprazole	N05AX12	15 mg	8.88 mg	0.59
Lurasidone	N05AE05	60 mg	60 mg	1
Haloperidol	N05AD01	8 mg	8.33 mg	1.04
Chlorpromazine	N05AA01	300 mg	100 mg	0.33
Trifluoperazine	N05AB06	20 mg	10 mg	0.5

ATC: Anatomical therapeutic chemical, DDD: Defined daily dose, PDD: Prescribed daily dose

**TABLE 4: WHO CORE PRESCRIBING INDICATORS AS ASSESSED FROM THE PRESCRIPTIONS**

Indicators	Value n (%)
The average number of drugs per prescription	(232/104) 2.23
Average number of antipsychotics per prescription in schizophrenia patients	(124/104) 1.19
Percentage of drugs prescribed by generic name	(172/232) 74
Percentage of drugs prescribed from National list of essential medicines 2015	(6 out of 14) 42.85
Percentage of encounters with the prescribed injection	(2/104) 1.92

**DISCUSSION:** Drug utilization focuses on factors relating to prescribing, dispensing, administering and taking of medication, and its associated events. Patient files and computer registries are widely used as instruments for collecting information on

drug <sup>7</sup>. It plays a key role in helping the healthcare system to understand, interpret and improve the prescription, administration, and use of medications whose principal aim is to facilitate rational use of drugs <sup>8</sup>.

**Socio-Demographic Profile:** In our study of 104 schizophrenia patients 59.61% were males and 40.39% females. The male prevalence identified in this study was similar to many other studies<sup>12-14</sup>. However, this finding is different from a study done in Gujarat by Galani VJ *et al.*, which showed that females and males affected by schizophrenia were almost equal to<sup>15</sup>. 68.20% of schizophrenia patients were below 40 years, and 31.80% were above 40 years in the present study. In a different study Ali A reported the peak age of onset of schizophrenia as 15-30 years<sup>16</sup>. Tandon *et al.*, reported that the illness appeared earlier in men, usually in the early twenties, and that women were affected in the twenties to early thirties<sup>17</sup>, which is a similar finding in our study.

**Anti-Psychotics Prescription Pattern:** In our study 95.96% prescriptions were atypical antipsychotics, and typical antipsychotics were 4.03% which is comparable to the studies done by Dutta SB *et al.*,<sup>18</sup> and Grover S *et al.*<sup>19</sup> Risperidone was the most commonly prescribed (52.88%) followed by olanzapine (28.84%), quetiapine (10.57%), aripiprazole (8.65%), amisulpride (7.69%) and lurasidone (3.84%). This showed a trend towards the use of newer atypical antipsychotics which are known to be better tolerated with less extrapyramidal symptoms than the typical antipsychotics<sup>20</sup>.

Antipsychotic polypharmacy was noted in 19.23% of the prescriptions which was less compared to other studies<sup>14, 18</sup>. Kontis *et al.*, reported that despite consistent recommendations for antipsychotic monotherapy, antipsychotic polypharmacy is a common practice in the treatment of schizophrenia<sup>21</sup>. Concomitant anticholinergics were used in 64.42% in the study. Current treatment guidelines do not recommend prophylactic and long-term use of anticholinergics in schizophrenia patients who are on antipsychotics<sup>22</sup>. Anticholinergics should be used only in select patients who are on high potency antipsychotics like haloperidol, those who have a history of EPSEs or have developed EPSEs and showing no improvement even after switching the antipsychotic. Anticholinergics if administered should be for short duration like 3-6 months<sup>23</sup>. Anticholinergics have side effects like dry mouth, urinary disturbances, constipation, cognitive

impairment, worsening of tardive dyskinesia and adversely interact with antipsychotics<sup>24</sup>.

Depot injections of risperidone and olanzapine were used very minimally in the study (1.92%). Depot preparations help to manage the patient non-adherence<sup>25</sup> and should be considered more commonly in the management of Schizophrenia patients.

**WHO Prescribing Indicators:** Average number of drugs per prescription was 2.23 which was similar to studies conducted by Paul et al. and Rode SB et.al, where the average drug per prescription was 2.2 and 2.1 respectively<sup>26, 27</sup>. 74% of the prescriptions in the study were written by the generic name of the drug. 42.85% of patients received antipsychotics which were in the National list of essential medicines (NLEM) 2015. A study by Banerjee *et al.*, noted only 28.6% of drugs used from NLEM list<sup>28</sup>. Fixed-dose combinations were not used in the study. 74% of prescriptions were written in generic name. Risperidone which was used more in the study is included in the NLEM 2015 of India.

**CONCLUSION:** The present study has been undertaken to assess the pattern of usage of antipsychotic medications in schizophrenia, which will assist in ensuring rational drug therapy and hence reduce the occurrence of adverse effects of drugs. The present study observed that atypical antipsychotics were more commonly prescribed than conventional drugs. Anticholinergic drugs were prescribed in high number even with atypical antipsychotics which claim to have less EPSEs when compared to conventional drugs. Clinicians should be aware of the adverse effects of long term use of anticholinergics, and the same should be limited to the patients who develop EPSEs despite minimal effective doses and trial of a different antipsychotic. Majority of the prescriptions were written in the generic name which is a positive prescribing factor, given the pressure practitioners face in prescribing selective medication brands. This study can provide an outline for rational prescribing practice and help in further improvement of drug prescribing patterns. Further research is essential in this direction to improve prescribing practice and to establish and standardize the treatment of schizophrenia.

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## REFERENCES:

- Kuipers E, Kendall T and Antoniou J: Schizophrenia, the NICE Guidelines on core interventions in the treatment and management of schizophrenia in adults in primary and secondary care. The British Psychological Society & the Royal College of Psychiatrists 2010.
- McGrath J, Saha S and Chant D: Schizophrenia: a concise overview of incidence, prevalence, and mortality. *Epidemiol Rev* 2008; 30: 67-76.
- Kirkbride JB, Errazuriz A and Croudace TJ: Incidence of schizophrenia and other psychoses in England, 1950-2009: a systematic review and meta-analyses. *PLoS One* 2012; 7(3): e31660.
- Jablensky A: Epidemiology of schizophrenia: the global burden of disease and disability. *Eur Arch Psychiatry Clin Neurosci* 2000; 250(6): 274-85.
- Ginovart N and Kapur S: Role of dopamine D(2) receptors for antipsychotic activity. *Handb Exp Pharmacol* 2012; 212: 27-52.
- Tiwari H, Kumar A and Kulkarni SK: Prescription monitoring of antihypertensive drugs utilization at Punjab University Health Centre in India. *Singapore Med J* 2004; 45: 117-20.
- Shalini S, Ravichandran V, Mohanty BK, Dhanaraj SK and Saraswathi R: Drug utilization studies-An overview. *Int J Pharm Sci Nanotechnol* 2010; 3(1): 803-10.
- Sachdeva PD and Patel BG: Drug utilization studies-scope and future perspectives. *Int J Pharm Bio Res* 2010; 1(1): 11-7.
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders (Fifth ed.)*. Arlington, VA: American Psychiatric Publishing 5-25. ISBN 978-0-89042-555-8.
- WHO. How to investigate drug use in health facilities: Selected drug use indicators. Geneva: WHO 1993, WHO/DAP/93, 1993; 1: 1-87.
- WHO. *Drugs and Therapeutics Committees - A Practical Guide*; World Health Organization 2003.
- Mccue RE, Waheed R and Urcuo L: Polypharmacy in patients with schizophrenia. *J Clin Psychiatry* 2003; 64: 984-9.
- Trivedi JK, Dhyani M, Yadav VS, Rai SB and Sinha PK: Anti-psychotic drug prescription pattern for schizophrenia: an Indian perspective. *Indian J Psychi* 2010; 52(3): 279.
- Ramdas S, Kuttichira P, Sumesh TP and Ummer SA: A study of an antipsychotic prescription pattern of patients with schizophrenia in a developing country. *Indian J Psychol Med* 2010; 32(1): 13.
- Galani VJ, Patel J, Patel K and Patel D: An epidemiological survey of patients suffering from schizophrenia in Gujarat. *Mintage J Pharmaceut Med Sci* 2013; 2(1): 15-7.
- Ali A: Disability in schizophrenia and its relationship with duration of illness and age of onset. *Int J Psychosoc Rehab* 2009; 14(1): 37-41.
- Tandon R, Keshavan MS and Nasrallah HA: Schizophrenia, "just the facts" what we know in 2008. 2. Epidemiology and etiology. *Schizophr Res* 2008; 102: 1-18.
- Dutta SB, Dhasmana DC and Bhardwaj R: Psychotropic drug utilization pattern among schizophrenics. *Indian J Psychiatry* 2004; 46(4): 381-2.
- Grover S, Kumar V, Avasthi A and Kulhara P: An audit of first prescription of new patients attending a psychiatry walk-in-clinic in north India. *Ind J Phar* 2012; 44: 319-25.
- Sahana DA, Keshava P, Rajeshwari S, Ullal SD, Rathnakar UP and Jaykumar JS: Pattern of psychotropic drug usage in psychiatric illnesses among elderly. *J Med Use Devel Countries* 2010; 2: 3-10.
- Kontis D, Theochari E, Kleisas S, Kalogerakou S, Andreopoulou A and Psaras R: Doubtful association of antipsychotic polypharmacy and high dosage with cognition in chronic schizophrenia. *Prog Neuropsychopharmacol Biol Psychiatry* 2010; 34: 1333-41.
- Role of anticholinergic medications in patients requiring long-term antipsychotic treatment for psychotic disorders, 2012. Available at: [http://www.who.int/mental\\_health/mhgap/evidence/resource/psychosis\\_q6.pdf](http://www.who.int/mental_health/mhgap/evidence/resource/psychosis_q6.pdf)
- Chakrabarti S and Kulhara P: Clinical practice guidelines for the management of schizophrenia. *Indian J Psychiatry* 2017; 59(1): 19-33.
- Ogino S, Miyamoto S, Miyake N and Yamaguchi N: Benefits and limits of anticholinergic use in schizophrenic use in schizophrenia: focusing on its effect on cognitive function. *Psychiatry Clin Neurosci* 2014; 68(1): 37-49.
- West JC, Marcus SC, Wilk Joshua, Countis LM, Regier DA and Olfson M: Use of depot antipsychotic medications for medication non-adherence in schizophrenia. *Schizophrenia Bulletin* 2008; 34(5): 995-01.
- Paul PK, Konwar M and Das S: To study the prescribing pattern of antipsychotic drugs in a tertiary care hospital of Assam. *Int J Pharm Pharm Sci* 2014; 6(4): 435-7.
- Rode SB, Ajagallay RK, Salankar HV and Sinha U: A study on drug prescribing pattern in psychiatry out-patient department from a tertiary care teaching hospital. *Int J Basic Clin Pharmacol* 2014; 3(3): 517-22.
- Banerjee I, Roy B, Sathian B, Banerjee I, Chakraborty PK and Saha A: Sociodemographic profile and utilization pattern of antipsychotic drugs among schizophrenic inpatients: a cross-sectional study from the western region of Nepal. *BMC Psychiatry* 2013; 13: 96.

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