

Drug utilization audit of antipsychotics using WHO methodology: recommendations for rational prescribing**Iram Shaifali¹, Rajib Karmakar¹, Shalini Chandra^{1*}, Santosh Kumar²**¹Department of Pharmacology,²Department of Psychiatry,
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Bareilly, Uttar Pradesh, India**Received:** 09 August 2018**Accepted:** 31 August 2018***Correspondence to:**Dr. Shalini Chandra,
Email: pharmapublications@rediffmail.com**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.**ABSTRACT****Background:** Utilization pattern of antipsychotics has undergone a major shift as the newly introduced atypical antipsychotics have heralded the market. Hence continuous studies on current prescribing trends are needed to provide most updated, effective and rational treatment of psychoses.**Methods:** This cross-sectional prospective study was conducted at Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India. OPD tickets of the department of psychiatry for the year 2016-2017 were evaluated for a total of 310 cases. These prescriptions were used to determine the drug utilization of antipsychotics and for their appropriateness against the WHO recommended core prescribing indicators.**Results:** A total of 310 patients satisfied the inclusion criteria and a male predominance was seen (male:female= 1.3:1). The most common psychotic disorder diagnosed was schizophrenia (44%). Majority of the patients (76%) received monotherapy and the prescribing trend showed a higher use of atypical antipsychotics (89%) over typical ones (11%). The most commonly prescribed anti-psychotic drugs were olanzapine (31%), followed by risperidone (26%). On analysing prescriptions according to the WHO core prescribing indicators it was observed that average number of antipsychotics prescribed per prescription was 1.32. 24% of drugs were prescribed by generic name and 5.2% were administered via injectable route. Drugs prescribed from National list of Essential Medicine, 2015 constituted 46%.**Conclusions:** The high inclination towards the use of atypical antipsychotics observed in our study correlates with the global changing trends in the treatment of schizophrenia. WHO prescribing indicators should be adhered to, to impart rational prescribing.**Keywords:** Antipsychotics, Drug utilization, Olanzapine, WHO Prescribing indicators**INTRODUCTION**

Psychiatric disorders have become the burden of illnesses in almost every country in the world due to its gigantic prevalence rate, acute onset, and consistent appearance. Almost all psychiatric disorder along with Schizophrenia are responsible for disability and premature death in the form of committing suicide, which is one of the leading causes of death worldwide with this disorder.¹ Today about 450 million people are suffering from the psychiatric disorder, the majority of them belong to developing countries.² Evidence collected from various global epidemiological researches indicate the prevalence rate of

schizophrenia in the range of 1.4 to 4.6 per 1000 and the rate of incidence in the range of 0.16-0.42 per 1000 populations.³ Out of top ten health conditions assigning for disability-adjusted life years (DALY), four are psychiatric disorders.⁴ Recently, WHO estimates that the neuropsychiatric conditions attribute nearly one-third of all years lived with disability (YLDs) worldwide.² According to various epidemiological studies the prevalence rate of psychiatric disorders fluctuates in between 9.5 to 370/1000 populations in India. Data from studies conducted in India shows that about 20% of the population in the community is suffering from one or other psychiatric disorder.⁵

Psychosis is defined as massive deterioration in reality-testing ('not in contact' with reality) associated with notable personality disturbance, impairment in social, interpersonal and occupational functioning, loss of insight and presence of the characteristic symptoms, like delusions and hallucinations.⁶ Schizophrenia involves 1% of world's population.⁷⁻¹⁰ Schizophrenia cannot be cured completely but can be easily controlled with proper treatment. With appropriate treatment, affected person can lead to normal healthy life and can be unified with society.¹¹ Symptoms may be clustered into three major groups-positive, negative and disorganized.¹² It is noted that Schizophrenia typically originates in late adolescence or early adulthood.¹³

Psychopharmacology is a rapidly expanding field hence psychiatrists are frequently exposed to newly introduced drugs which are claimed and projected as the better alternatives to traditional psychiatric medicines.¹⁴ Although there are recommendations for antipsychotic monotherapy, still the prevalence of polypharmacy in the management of Schizophrenia is showing a steady increase.¹⁵ Polypharmacy can lead to needless expenses and also expose the patients to serious drug-related adverse effects.^{16,17}

Now-a-days unnecessary drug consumption is a matter of concern in the global health system. The World Health Organization evaluates that more than half of all prescribed, distributed or sold drugs are not necessary for consumption and half of all patients suffer from medication errors even though they received appropriate medicines.¹⁸ Available literature shows lots of disparity in the prescription pattern of antipsychotics across different countries and even different regions in a same country.⁵ Hence, it is essential to study the recent trends of antipsychotic prescription patterns to evaluate the prescribed treatment regimens against the standard guidelines. This may reinforce attitude to prevent the misuse of antipsychotics and to obtain rational and cost-effective medical care.¹⁹ So, with this background in mind and also due to scarcity of data on the prescription pattern of antipsychotics from this part of North India, authors planned the present study in the Psychiatry out-patient Department of our medical college with the following objectives:

- To evaluate the current prescription pattern of antipsychotics.
- To analyse the prescriptions, based on WHO core prescribing indicators.
- To suggest modifications, if necessary, in prescribing patterns so as to make medical care rational and cost effective.

METHODS

A prospective, observational study was conducted by the Department of Pharmacology in collaboration with the Department of Psychiatry of Rohilkhand Medical College

and Hospital. The study material comprised of the 310 eligible case records of patients attending Psychiatry OPD over a period of twelve (12) months (Nov 2016 to Oct 2017). Approval for the study was sought from the Institutional Ethics Committee (IEC) before the initiation of study and informed consent was taken from the patients.

Sample size

Patients of all age groups and either gender, attending Psychiatry OPD, diagnosed with any psychotic disorder on the basis of ICD-10 DCR criteria and those patients for whom an antipsychotic agent was prescribed either as main drug or concomitantly with other drug, comprised the sample size for the study.²⁰ Patients whose diagnosis was not confirmed or who did not give voluntary informed consent were excluded from the study.

Data collection technique and study tools

Prescription was collected from the patients either by doing photocopy or by taking photograph or carbon copy. No follow up of the patient was done. A specially designed performa was used to collect the demographic and prescribing pattern data in the following format.

Prescription pattern data

- Types of psychotic disorders diagnosed
- Percentage of typical and atypical antipsychotics prescribed
- Percentage of antipsychotic monotherapy and polytherapy
- Most commonly prescribed typical and atypical antipsychotics
- Prescription was analysed using WHO Core prescribing indicators and compared with optimal value provided by WHO^{21,22}
- Average number of drugs per prescription
- Average number of antipsychotics per prescription
- Percentage of drugs prescribed by generic name
- Percentage of encounters with an injection prescribed
- Percentage of drugs prescribed from National List of Essential Medicine 2015.²³

Statistical analysis

The data was analysed using Microsoft Excel 2007 and results were displayed with the help of tables and graphs. Statistical Package for the Social Sciences (SPSS) for Windows Version 23.0 (SPSS Inc; Chicago, IL, USA) was used for Descriptive statistical analysis.

RESULTS

A total of 310 patients fulfilled the inclusion criteria and a male predominance was seen in the study population (male:female= 1.3:1). Majority of the patients belonged to the age group of 15-40 years of age, followed by a

declining trend thereafter as depicted in Figure 1. 56% of the patients were residents of urban area while 44% belonged to rural area as depicted in Figure 2.

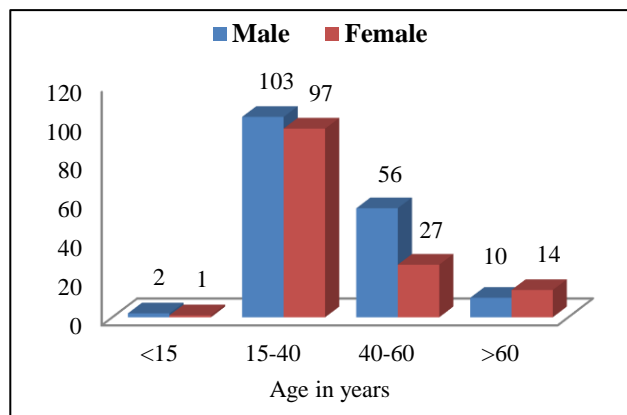


Figure 1: Age-wise distribution of both sexes.

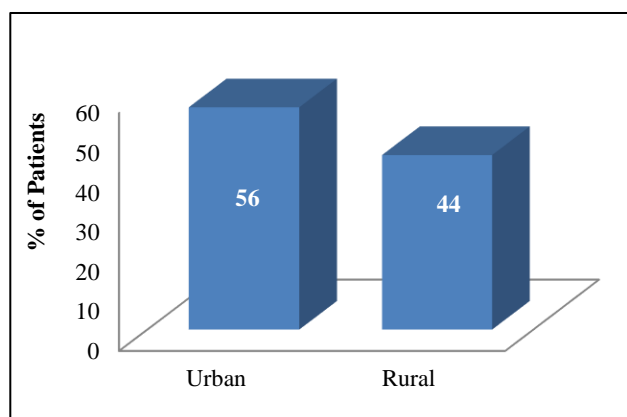


Figure 2: Distribution of patients according to habitat.

The most common psychotic disorder diagnosed was schizophrenia (44%) followed by bipolar affective disorder (29%) as seen in Figure 3.

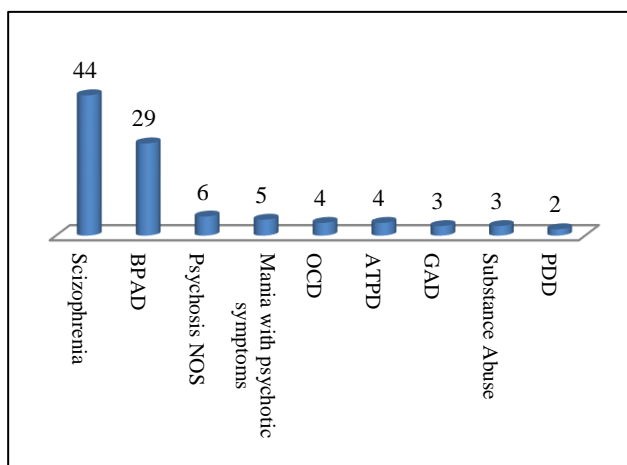


Figure 3: Percentage distribution of diseases in psychiatry OPD.

In the present study, polypharmacy was documented only in 24% of the prescriptions analysed while the rest 76% received Monotherapy (Figure 4). The prescribing trend showed a high inclination towards use of atypical antipsychotics.

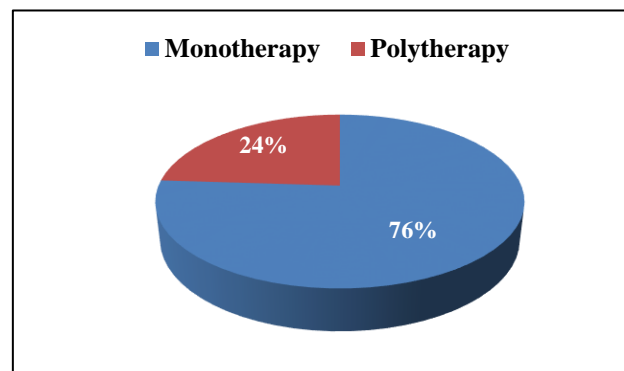


Figure 4: Monotherapy Vs polytherapy.

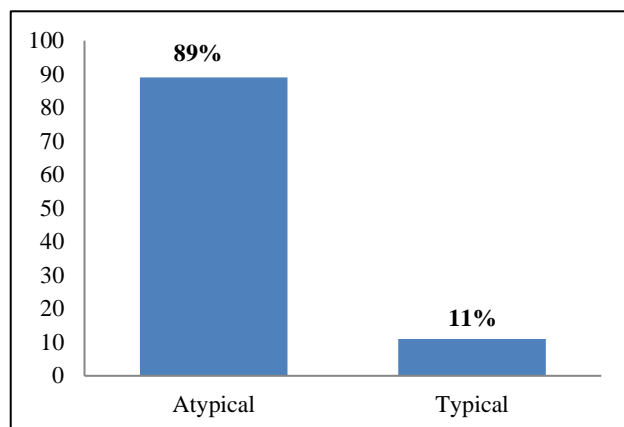


Figure 5: Percentage of the type of antipsychotic used.

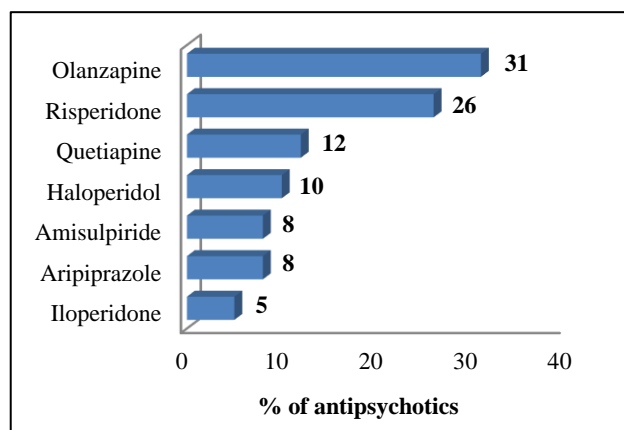


Figure 6: Prescribing pattern of antipsychotics in percentage.

Figure 5 reflects that 89% of atypical antipsychotics were prescribed as compared to 11% of typical antipsychotics. Figure 6 depicts the percentage utilization of drugs for the treatment of Schizophrenia and other psychotic disorders.

The most commonly prescribed anti-psychotic drugs were olanzapine (31%), followed by risperidone (26%), quetiapine (12%), haloperidol (10%), amisulpiride (8%), aripiprazole (8%) and iloperidone (5%).

Prescriptions were analysed according to the WHO Prescribing Indicators and it was observed that average number of drugs per prescription was 3.15 and average number of antipsychotics prescribed per prescription was 1.32. 24% of the drugs were prescribed by generic name. Percentage of drugs prescribed via injectable route was 5.2% only. Drugs prescribed from National list of Essential Medicine 2015 constituted 46% (Table 1).

Table 1: Analysis of prescriptions according to WHO core prescribing indicators.

Drug use indicators	Outcome	Optimal value
Average number of drugs prescribed per prescription	3.15	1.6-1.8
Average number of Antipsychotics prescribed per prescription	1.32	1.6-1.8
Percentage of the drugs prescribed by generic name	98/410 (24%)	100%
Percentage of injectable drugs prescribed	16/310 (5.2%)	13.4%-24.1%
Percentage of drugs prescribed from National list of Essential Medicine	188/410 (46%)	100%

Total number of prescriptions analysed 310; Total number of drugs prescribed 977; Total Number of antipsychotics prescribed 410.

DISCUSSION

One of the burning issues in global health system is injudicious and irrational use of drugs. The burden of psychiatric disorders like Schizophrenia is also increasing enormously in the present scenario. Parallel to it the field of psychopharmacology is also growing exponentially with the introduction of new and improved drugs. But still, ironically, less than 30% of patients in the private sector and less than 40% of patients in the public sector are treated according to clinical guidelines in developing countries.²⁴ To overcome such obstacles, World Health Organization and International Network for Rational Use of Drugs (INRUD) has recommended indicators of standard drug use which help us to detect the errors in prescription writing.^{19,25,26} Hence continuous Drug Utilization Studies of Anti-psychotic agents are needed to promote safe and effective therapy in the real-life situations.

In present study among 310 patients, a male: female ratio of 1.3:1 was seen. Present study finding of male preponderance was similar other studies done in Maharashtra by Sushma HK et al, and also by Thakare et al.^{27,28} However this finding is different from studies done

in Indore by Atal S et al, and in Gujrat by Galani VJ et al.^{29,30}

Majority of the patients were below 40 years of age (65%) whereas only 35% of the patients were above 40 years of age. In addition to this, present study findings depicted that schizophrenia has an early age of onset, affecting males in their early twenties and females in their late twenties and early thirties. Similar findings were observed by Rode SB et al, and Ali A et al.^{31,32}

In present study the most common psychotic disorder diagnosed was schizophrenia (44%) followed by bipolar affective disorder (29%) and so on. Other authors in the field like Rode SB et al, and George A et al, also documented similar prevalence of psychotic disorders.^{31,33} 24% of the prescriptions analysed by us showed polypharmacy while the rest 76% depicted monotherapy. A high inclination towards the use of atypical antipsychotics (89%) was observed as compared to typical antipsychotics (11%).

Atypical agents are endorsed as preferred agents because of their better efficacy, reduced chances of the extra-pyramidal adverse effects, for improving negative symptoms, cognitive dysfunction and also for bringing response in patients resistant to conventional antipsychotics. Present study finding regarding favoured use of atypical anti-psychotics is in concordance with other authors in the field but in contrast to Sushma HK et al, who concluded that typical anti-psychotics were prescribed more as compared to atypical antipsychotics.^{27,34,35}

Olanzapine (31%) was the most frequently prescribed medication amongst anti-psychotics followed by risperidone (26%), quetiapine (12%), haloperidol (10%), amisulpiride (8%), aripiprazole (8%) and iloperidone (5%). These results of present study are in agreement with the findings of various other researchers like Siddiqui RA et al, found that olanzapine was the most commonly used antipsychotic drug in 51% of patients followed by risperidone in 23% and quetiapine in 13% of patients.³⁶ Other less commonly used drugs were Aripiprazole in 6%, Clozapine etc. Atal S et al, also reported similar findings, regarding the prescribing pattern of antipsychotics i.e. olanzapine (28.08%), followed by risperidone (25.84%) and haloperidol (23.03%), among single agent antipsychotic drugs.²⁹ The survey of the published literature of the recent past also reflects similar findings by Chakravarty P et al, Thakare V et al, and Rode SB et al.^{26,28,31}

Prescription writing is a skill that reflects the competence of a physician and his attitude towards rational prescribing. Time and again systematic reviews have emphasized that prescribing errors are common and can affect from 4.2 to 82% of prescriptions.³⁷

Prescription auditing is an educational tool to measure and monitor what we are prescribing against a reference

standard. Hence regular auditing of prescriptions is extremely imperative in order to ensure high standard and best quality care to the patients.³⁸ So, in this study we also conducted prescription auditing in Psychiatry OPD and compared the quality of prescriptions against the World Health Organization (WHO) recommended core prescribing indicators to investigate rational use of drugs.²¹

The prescription auditing results of present study showed that a total of 977 drugs were contained in 310 prescriptions. Out of which, 410 were antipsychotics. So, the average number of drugs per prescription was 3.15 and average number of antipsychotics per prescription was found to be 1.32. Other researchers in the field like Balaji R et al, and Kumar S et al, have also noted similar findings, whereas Rode SB et al, and George A et al, have reported lesser number of drugs per prescription i.e. 2.2 and 2.79 respectively.^{31,33,39,40} Average number of drugs per person is an important index of prescription audit. It is desirable to keep the mean number of drugs per prescription as low as possible, since higher figures are inclined to increase the risk of adverse effects, drug interactions and inflate the cost as well.

A very few drugs were prescribed by generic names in present study, being 24% only, while the rest 76% were prescribed by brand name. A similar trend of prescribing of drugs by brand names was observed by Rode SB et al, who noted only 30% of prescriptions with generic names.³¹ But George A et al, and Balaji R et al, reported a high use of generic drugs accounting to 98.15% and 76.34% respectively.^{33,39} Generic substitution should be recommended because these drugs are beneficial, provided adequate quality control is assured, and are also cost-effective.⁴¹

Most of the antipsychotics were prescribed by oral route except haloperidol which was given in injectable formulation (5.2%) to control the acute episodes. Rode SB et al also reported use of only 9% of injectable medicines. 46% of the medicines were prescribed from NLEM 2015 in present study.^{23,31} Present study findings are in line with Balaji R et al, who found 50% use of medicines from NLEM 2015 and also with Patted UH et al, who found only 47.33% of patients received antipsychotics which were in the National list of essential medicines (NLEM) 2015.^{39,42} But Rode SB et al, and George A et al, have depicted a higher percentage (i.e. 81.36% and 96.77%) use of drugs prescribed from essential drug list (WHO and Indian).^{31,33} This issue of under utilization of drugs from NLEM is of concern and can be redressed to some extent by prescriber education. The primary intention of NLEM is to promote rational use of medicines in terms of cost, safety and efficacy.

CONCLUSION

To conclude, present study has revealed that schizophrenia is the most common psychotic disease affecting males more than females. Patients suffering from psychotic

illness are usually advised monotherapy. An increasing trend of prescribing atypical antipsychotics is noted, olanzapine being the most frequently prescribed drug followed by risperidone. As the percentage usage of generic drugs and incorporation of drugs from NLEM was low, so this issue needs to be refined and we recommend that the prescribing pattern should be improved by adhering to the WHO prescribing indicators for the betterment of public health.

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