



SCHIZOPHRENIA: PSYCHO-SOCIAL DEMOGRAPHIC PROFILE AND DRUG UTILIZATION STUDY OF ANTI-PSYCHOTICS AT A GOVERNMENT MEDICAL TEACHING HOSPITAL

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ABSTRACT

Objective: To assess the drug utilization and prescribing pattern of antipsychotic agents in Schizophrenia patients with regard to drug, drug class, ATC coding, combination therapy and sociodemographic details. **Methodology:** A prospective observational study, for 6 months in the psychiatry department of a tertiary care hospital. Ethical clearance was obtained prior to the study. Data was collected by using a patient data collection form and the antipsychotic drug use was recorded. **Results:** 186 patient's data was recorded and analyzed statistically for the pattern of use of antipsychotics. olanzapine(27.98%) was found to be most prescribed followed by risperidone(20.98%), haloperidol (6.45%) and chlorpromazine (8.60%). Total no. of drugs prescribed for 186 patients is 428, mean of the drugs prescribed per prescription is 2.30, total no. of antipsychotic

drugs prescribed is 218, average number of antipsychotic drugs per prescription is 1.17. **Conclusion:** Atypical antipsychotics(olanzapine, risperidone) were the most prescribed compared to the typical antipsychotics(haloperidol, chlorpromazine). Most of the drugs were prescribed by generic names, only few drugs was prescribed by their brand names. and no polypharmacy was seen.

KEYWORDS: Schizophrenia, Drug utilization study, antipsychotic agents, Prescribing Pattern.

INTRODUCTION

Schizophrenia is one of the most complex and challenging of psychiatric disorders. It represents a heterogeneous syndrome of disorganized and bizarre thoughts, delusions, hallucinations, inappropriate affect, and impaired psychosocial functioning.^[3] Schizophrenia is a severe mental disorder, characterized by profound disruptions in thinking, affecting language, perception, and the sense of self. It often includes psychotic experiences, such as hearing voices or delusions. It can impair functioning through the loss of an acquired capability to earn a livelihood, or the disruption of studies. Schizophrenia typically begins in late adolescence or early adulthood. There are effective treatments for schizophrenia and people affected by it can lead a productive life and be integrated in society.^[1]

Epidemiology: Globally the prevalence of schizophrenia shows a wide range of differences. It is estimated that the median prevalence of schizophrenia is 4.6/1,000 for point prevalence, 3.3/1,000 for period prevalence, 4.0/1000 for lifetime prevalence and 7.2 for lifetime risk of morbidity across the world. According to standardized mortality ratio, the individuals with a complaint of schizophrenia have a 2-3-fold increased mortality risk as compared with the general population. Schizophrenia is a severe form of mental illness affecting about 7 per thousand of the adult population, mostly in the age group 15-35 years. Though the incidence is low (3-10,000), the prevalence is high due to chronicity. Schizophrenia affects about 24 million people worldwide. More than 50% of persons with schizophrenia are not receiving appropriate care. 90% of people with untreated schizophrenia are in developing countries.^[2] In 1990, the WHO ranked schizophrenia as one of the 10 leading causes of disability with an annual direct cost of 19 billion US dollars and an additional annual indirect cost of 46 billion US dollars from lost productivity.^[2] Schizophrenia affects more than 21 million people worldwide. It is a treatable disorder. One in two people living with schizophrenia does not receive care for the condition. Care of persons with schizophrenia can be provided at community level, with active family and community involvement.^[1]

Pathophysiology

Computed axial tomography (CAT) scans and magnetic resonance imaging (MRI) studies show increased ventricular size, decreased brain size, and brain asymmetry have been

reported. Lower hippocampal volume may correspond to impairment in neuropsychological testing and poorer response to first-generation antipsychotics (FGAs).

Dopaminergic hypothesis: Psychosis may result from hyper- or hypoactivity of dopaminergic processes in specific brain regions. This may include the presence of a dopamine (DA) receptor defect. Positive symptoms may be more closely associated with DA receptor hyperactivity in the mesocaudate, while negative symptoms and cognitive symptoms may be most closely related to DA receptor hypofunction in the prefrontal cortex.

Glutamatergic dysfunction: A deficiency of glutamatergic activity produces symptoms similar to those of dopaminergic hyperactivity and possibly symptoms seen in schizophrenia.

Serotonin (5-HT) abnormalities: Serotonergic receptors are present on dopaminergic axons, and stimulation of these receptors decreases DA release, at least in the striatum. Although somewhat more diffuse, the distribution of serotonergic neurons is similar to that of dopaminergic neurons, thus allowing these two neurotransmitter systems to innervate the same areas. In fact, 5-hydroxytryptamine₂ (serotonin₂; 5-HT₂) receptors and D₄ receptors have been found to be colocalized in the cortex. Patients with schizophrenia with abnormal brain scans have higher whole blood 5-HT concentrations, and these concentrations are correlated with increased ventricular size.^[4]

Background on Drug utilization study

According to WHO, Drug utilization study is defined as a study of marketing, distribution, prescription and uses of drugs in a society highlighting on the resulting medical, social and economic consequences.^[5] Drug utilization research affords a baseline reference point about the effect of diverse interventions on prescribing the concerned drugs. Drug utilization studies assess appropriateness of pharmacotherapy with important implications for clinical practice as they provide a clear picture of real world use pattern and allow identifying areas that need change and improvement. It also provides insight in to efficacy of drug. The study of prescribing pattern is a component of medical audit which seeks monitoring, advice, evaluation and necessary modifications in the prescribing practices of the prescribers to achieve rational and cost effective medical care.

It is important to realize that inappropriate use of drugs represent a potential hazard to patients and an unnecessary expense. This necessitates a periodic review of pattern of drug utilization to ensure safe and effective treatment.^[5] To improve the overall drug use,

especially in developing countries, international agencies like World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) have recommended standard drug use indicators, ^[6,7] which help us to know the shortcomings in prescription writing. ^[6,7]

AIMS AND OBJECTIVES

The main aim of the study was to assess the drug utilization and prescribing pattern of antipsychotic agents in Schizophrenia patients with regard to drug, drug class, ATC coding, combination therapy and sociodemographic details for patients with schizophrenia among in patients and out patients or hospitalized patients in south Indian context. The specific objectives were to find out the commonest antipsychotics prescribed and also to find out whether the antipsychotics were prescribed by generic or trade names, mono therapy or combination of drugs and psychotherapy, groups of antipsychotics prescribed, to determine the prevalence of antipsychotic usage in the community and also to collect the socio demographic details of patients. This is the first study undertaken in the utilization pattern of antipsychotics among the schizophrenic patients in south Indian context, in and around Guntur.

MATERIALS AND METHODS

Study design: This is a prospective, observational, non-experimental, non-interventional, uncontrolled, unblinded, unicentric, pharmaco epidemiologic study.

Study duration: The study is conducted for a period of 7 months i.e.; from March 2014 to September 2014 in the psychiatry (both inpatient and outpatient).

Study site: Psychiatry department, at Government General Hospital, a tertiary care teaching hospital, Guntur, Andhra Pradesh, India.

Significance of the study: There were no studies conducted previously in this hospital regarding the pattern of drug use in Psychiatry, Government General Hospital, a tertiary care teaching hospital, Guntur, Andhra Pradesh. . Hence the present study is taken to know the pattern of prescription and drug use in schizophrenia.

Selection Criteria

Inclusion criteria: Patients of the age group 16 years and above, of both the genders male and female, diagnosed with schizophrenia attending the psychiatry (both inpatient and

outpatient)department of Government General Hospital, Guntur hospital were included. Both inpatients and outpatients diagnosed with schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) were eligible for recruitment in this study.

Exclusion criteria: Patients with any other chronic psychiatric illness, critically ill patients who cannot participate in the study, patients who are not willing to participate were excluded from the study. However, prescriptions containing drugs for comorbid (nonpsychiatric) conditions, which were not prescribed in the department of psychiatry, were excluded.

Data collection process: The patient data was collected by using a predesigned proforma, the patient data collection form and their prescription pattern or drug use was recorded and subjected to analysis. Data were collected for age, gender, diagnosis, sociodemographic details, address and phone number of the patient. Treatment provided, name of the drug, dosage form, route of administration and duration of prescription (drug information) were recorded.

Data analysis: Data were subjected to analysis for Demographic details (age and gender), Psychiatric diagnosis, Antipsychotic drugs prescribed and prescribing pattern, Completeness of prescription, appropriateness of drug, dose, frequency, and duration, Rationality of prescriptions according to WHO prescribing indicators.

Ethical clearance: Ethical approval was obtained from the institution before the initiation of the study. In accordance with the Declaration of Helsinki and the ethical guidelines established by Guntur Medical College Guntur, all study objectives, as well as data protection and analysis methods, were explained to each subject prior to inclusion in the study, and written informed consent was obtained. All study protocols were approved by the institutional ethics committee, Guntur Medical College Guntur.

Informed Consent: Patient was informed about the purpose of the study and written consent was taken prior to their participation in the study. Patient consent form was prepared in the vernacular language, Telugu and also in English.

RESULTS AND DISCUSSION**Demographic Profile of the study patients**

A total of 186 patients of 16-75 years age group were included in our study, among them higher prevalence were observed in females n=125(67.2%) than males n=61 (32.8%). Lower middle class and unemployed (not working/jobless) accounted for majority of psychiatric disorder.

Table 01: Sociodemographics of schizophrenia patients

| Sociodemographic Number of Parameters patients(%) | |
|--|-------------|
| Age | |
| 15-25 | 19(10.21%) |
| 26-35 | 38(20.43%) |
| 36-45 | 45(24.19%) |
| 46-55 | 43(23.11%) |
| ≥56 | 41(22.04%) |
| Sex | |
| Females | 125(67.2%) |
| Males | 61 (32.8%) |
| Educational status | |
| Illiterate | 25(13.44%) |
| Upto 5 th | 20(10.75%) |
| Upto 7 th | 31(16.66%) |
| Upto 10 th | 45(24.19%) |
| Upto 12 th | 51(27.41%) |
| Graduation | 14(7.53%) |
| Socioeconomic status | |
| Lower middle class | 101(54.30%) |
| Middle class | 67(36.02%) |
| Upper middle class | |

| |
|--------------------|
| 18(9.68%) |
| Employment |
| Working |
| 78(41.9%) |
| Not working |
| 108(58.06%) |
| Status of living |
| Living alone |
| 34(18.28%) |
| Living with family |
| 152(81.72%) |
| Family |
| Nuclear |
| 72(38.7%) |
| Joint |
| 114(61.3%) |

Observed drug use pattern in schizophrenia

Antipsychotic drugs prescribed were haloperidol, chlorpromazine, olanzapine, risperidone. Drug prescribing pattern for anti-psychotics were 15.05% (n=28) in typical (or first generation antipsychotics) and 67.75% (n=126) in atypical (or second generation antipsychotics) antipsychotics. Number of patient with typical antipsychotics such as haloperidol (n=12) and chlorpromazine (n=16) and total number of patients with typical antipsychotics were 28. Similarly subjects enrolled in atypical antipsychotics are Olanzapine (n=69) and Risperidone (n=57), a total of 64 patients; whereas 17.20% (n=32) of patients were on combination of both typical antipsychotics and atypical antipsychotics, these results are depicted in table 2.

154(82.8%) patients were on a single antipsychotic drug whereas 32(17.20%) were on combination of antipsychotics. The antipsychotic drug utilization in patients according to WHO-ATC coding system^[8] has been shown in table 2.

Table 2: Antipsychotic Drug Utilization in schizophrenia according to WHO-ATC coding system.

| Name of drug (ATC code) | No. (%) of patients |
|---------------------------|---------------------|
| Olanzapine N05AH03 | 69 (37.1%) |
| Risperidone N05AH08 | 57(30.64%) |
| Haloperidol N05AF05 | 12 (6.45%) |
| Chlorpromazine N05AA01 | 16 (8.60%) |

Analysis of prescription pattern of antipsychotic drugs

No. of prescriptions containing a single antipsychotic drug = 154

% of prescriptions containing a single antipsychotic drug = $154/186 \times 100 = 82.8\%$

No. of prescriptions with a combination (more than a single) of antipsychotic drugs = 32

The % of prescriptions with a combination (more than a single drug) of antipsychotic drugs = $32/186 \times 100 = 17.20\%$

In our study, WHO drug use indicators were also studied and analysed, WHO drug use core indicators included, to analyze the prescriptions were

Total number of drugs prescribed = 428

Average number of the drugs per prescription = 2.30

Total number of antipsychotic drugs prescribed = 218

Average number of the psychotropic drugs per prescription = 1.17

Total number of the psychotropic drugs prescribed by generic name = 152

Percentage of the psychotropic drugs prescribed by generic name = 81.72%

Total no. of drugs prescribed for 186 patients is 428, Mean of the drugs prescribed per prescription is 2.30, Total no. of antipsychotic drugs prescribed is 218, Mean of antipsychotic drugs per prescription is 1.17.

Adjuvant drug use pattern in schizophrenia

Among the adjunctive drugs used, trihexyphenidyl, central anticholinergic agent accounting to 108(58.06%) of 186 prescriptions was the most commonly used drug, to prevent or manage the extra pyramidal symptoms, and is the most commonly concomitant drug used.

In schizophrenia, although prescribing frequency of atypical antipsychotic was higher than the typical, the anticholinergic agents were prescribed in the majority of the patients. This is in accordance with a pharmacoepidemiological study conducted by Broekema *et al.* in Europe which also observed that anticholinergics were co-administered with atypical antipsychotic drug in schizophrenia.^[9]

Generic prescribing

Prescribing all drugs by their generic names is the recommendation of the WHO. In the present study, it is worthy to note that most of the drugs 152(81.72%) were prescribed by their generic names and only 34(18.28%) drugs were prescribed by their brand names.

No occasion of inappropriate prescribing of antipsychotic drugs or use of wrong dose, frequency or duration of treatment was noticed.

The study found that the prescription pattern at the hospital studied was rational, all the prescriptions were complete and polypharmacy was not seen.

Definitions of polypharmacy that are generally cited are the prescribing of medication not corresponding to the diagnosis and incidence of more than six drugs in a single prescription^[10]. As per these criteria, there was no polypharmacy as no inappropriate drug was prescribed and no prescription contained more than six drugs. Prescription of a single antipsychotic was common and monotherapy was found in 154 (82.8%) of 186 antipsychotic prescriptions, which is similar to a study in London, where antipsychotic monotherapy was found in 84 out of 99 (84.85%) prescriptions^[10].

CONCLUSION

The results of this study indicated that atypical antipsychotics such as olanzapine, risperidone were the most commonly prescribed compared with that of the typical antipsychotics such as haloperidol and chlorpromazine which may be due to the lesser incidence of side effects. Olanzapine was 37.1% prescribed, risperidone 30.64% prescribed among atypical (or second generation) antipsychotics which was much higher than the typical (or first generation) antipsychotics, haloperidol accounting for 6.45% and chlorpromazine 8.60% of the prescriptions.

Among the adjuvant drugs used, trihexyphenidyl, central anticholinergic agent was the most common concomitant drug, used to prevent or manage the extra pyramidal symptoms. Polypharmacy was not observed in the prescriptions. Most of the drugs were prescribed by their generic names and only few drugs was prescribed by their brand names. Drug utilization studies in psychiatric disorders are few in Indian populations. There is a dare need to drug utilization studies in schizophrenia to boost up the pharmacoepidemiological studies.

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