

# A Prospective Observational Study on Assessment of Prescribing Pattern and Effectiveness of Psychotropic Medication on Schizophrenia in a Tertiary Care Hospital

Muhammed Shamnad\*, Carolin Antony, Zainaba Ajmajashy, Muktha K, Mohamed Huwais

Department of Pharmacy Practice, Shree Devi College of Pharmacy, Dakshina Kannada, Mangalore, Karnataka, INDIA.

## ABSTRACT

**Aim:** Schizophrenia is a chronic mental disorder that is related to poor physical health, early death and severe functional impairment. Schizophrenia is a worldwide condition that affects 1% of the population. It refers to a category of symptoms that involve disorganized and bizarre thinking, delusions, hallucinations, inappropriate affect and poor psychosocial functioning. **Aim/Background:** The main aim of the study is to assess the prescribing pattern and effectiveness of psychotropic medication on schizophrenia. **Materials and Methods:** Patient data was collected using data collection form which included the demographic details, mental status examination, diagnosis and medications. Assessment of prescription pattern was done by analyzing the prescription of 30 patients. Effectiveness was evaluated using PANSS SCALE. **Results:** A total of 30 patients with schizophrenia were studied. Anti-psychotics were prescribed to 27 (90%) of the patients. Anti-depressants were prescribed to 5 (16.7%) patients. Mood stabilizers were prescribed to 2 (6.7%) patients. Tranquilizers/hypnotics were prescribed to 8 (26.7%) patients. Anti-cholinergic were prescribed to 11 (36.7%) patients. Other psychiatry drugs were prescribed to 4 (13.3%) patients. There was a significant reduction in PANSS score before and after treatment. This shows that psychotropic medication are effective in treating patients with schizophrenia. **Conclusion:** The present study concludes that antipsychotics are the most prescribed drugs in schizophrenia followed by anticholinergic. Psychotropic medications are effective in treating schizophrenia as it was proved by PANSS score analysis. The study report also showed that the impact of drug therapy was more effective in males than in females as it shows a significant improvement in the symptoms of schizophrenia.

**Keywords:** Effectiveness, Prescription pattern, Gender, Polypharmacy, PANSS and Schizophrenia.

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Address for  
correspondence:

Mr. Muhammed Shamnad,

Department of Pharmacy  
Practice, Shree Devi College  
of Pharmacy, Kenjar Airport  
Road, Dakshina Kannada,  
Mangalore-574142, Karnataka,  
INDIA.

Email id: shamnadjabbar@  
gmail.com

## INTRODUCTION

Schizophrenia is a chronic mental disorder that is related to poor physical health, early death, and severe functional impairment.<sup>1</sup> Schizophrenia is a worldwide condition that affects 1% of the population.<sup>2</sup> It refers to a category of symptoms that involve disorganized and bizarre thinking, delusions, hallucinations, inappropriate affect, and poor psychosocial functioning.<sup>3</sup> It is estimated that seven people out of

every 1000 will experience SD during their lifetime, with symptoms typically appearing in the second or third decade.<sup>4</sup> The disease is most likely to affect people between the ages of 15 and 30.<sup>5</sup>

The onset of schizophrenia starts with the prodromal phase that begins with the first changes in behavior and lasts until the onset of psychosis. It is characterized by a slow and gradual onset of signs and symptoms that can last weeks to years, but



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typically persists for at least a year. The course of illness is highly variable ranging from complete remission (i.e., a return to full premorbid functioning after a single psychotic episode) to continuous unremitting psychopathology and cognitive, social, and occupational dysfunction.<sup>6</sup> Patients with schizophrenia are at a higher risk of developing a variety of other medical conditions, homelessness, unemployment, and premature death. It is linked to a significant personal, social, and financial burden. These patients struggle to excel in school, find or keep a job, form and maintain social relationships, live independently, and even take care of their basic everyday needs. Schizophrenia is thought to be characterized by cognitive deficits.<sup>7</sup>

**Management:** The main treatment of schizophrenia is pharmacotherapy, but residual symptoms may remain. As a result, non-pharmacological therapies such as psychotherapy are critical. Individual, group and cognitive behavioral psychotherapy are the three forms of psychotherapy.<sup>8</sup> Cognitive behavioral therapy (CBT) is a treatment method that aims to change undesirable ways of thinking, feeling and functioning. When these two approaches are used together, the patient is more likely to have healthy behavior and thoughts. Yoga when combined with antipsychotic drugs, is more effective in treating both positive and negative symptoms than medications alone.<sup>9</sup> The classes of psychotropic drugs used to treat schizophrenia today are first-generation (FGA) and second-generation antipsychotics (SGA).<sup>10</sup> Switching to other antipsychotics, adding other antipsychotics and adding other groups of psychotropic drugs are all common treatment methods.<sup>8</sup>

## OBJECTIVES

### Primary objectives

- To evaluate the prescribing patterns of psychotropic medication in schizophrenia.
- To evaluate the effectiveness of psychotropic medication in schizophrenia.
- Secondary objective
- To assess the impact of drug therapy in gender.

## MATERIALS AND METHODS

A prospective observational study was carried out in the

inpatients of the concerned department for a period of six months at Yenepoya Medical College and Hospital, Mangaluru. A patient information sheet was given to the patients and informed consent was obtained from the patient and or care givers. About 30 patients were selected for the study based on inclusion and exclusion criteria. Patient data was collected using patient data collection form which included the demographic details, mental status examination, diagnosis and medications. Assessment of prescription pattern was done by analyzing the prescription of 30 patients. Effectiveness was evaluated using PANSS SCALE, scores before the treatment and after the treatment were compared.

### Study design

This is a Prospective Observational Study.

### Study site

The study was conducted in department of Psychiatry Ward of Yenepoya Medical College, Deralakatte.

### Study duration

Study was be carried out for a period of 6 months.

### Study criteria

The study was carried out by considering the following criteria:

#### Inclusion Criteria

- Patients diagnosed with Schizophrenia with/without co morbidities.
- Patients above the age of 18 years of both gender.
- Patients willing to participate in the study.

#### Exclusion criteria

- Patients with sub-normal intelligence.
- Patients with hearing or eye sight problem.

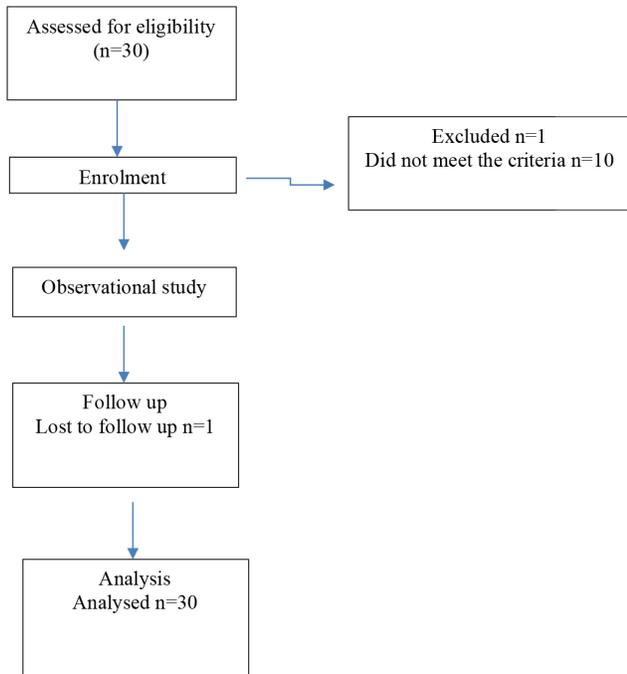
### IEC Approval

The study was approved by the Yenepoya University Ethics Committee. The data collected were tabulated and analyzed using Microsoft Excel version 13 and SPSS Version 22.

**Approval date:** 16-04-2021 Protocol no: YEC2/762.

## RESULTS

### Consort flow chart



The prospective observational study was conducted for 6 months in Yenepoya Medical College Hospital, Deralakatte and Mangalore. A total of 30 patients receiving psychotropic medication were included in the study.

### Patient Distribution Based on Gender

Out of 30 patients included in the study, 15 (50%) were male and 15 (50%) were female patients diagnosed with schizophrenia, which is represented in Table 1.

### Age-Wise Distribution of the Subjects.

Age wise categorization was done and the patients were divided into 4 age groups such as 18-28, 29-38, 39-48 and >48 years, which is represented in Figure 1.

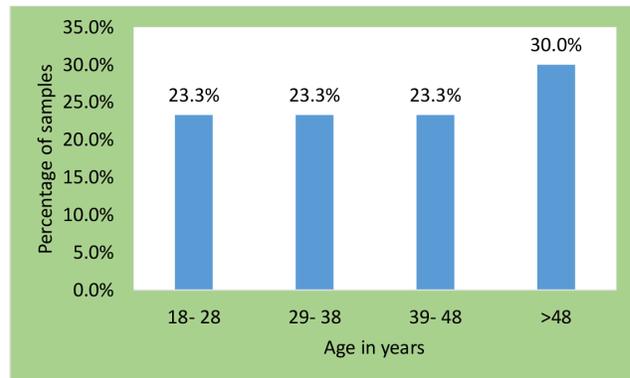


Figure 1: Age-Wise Distribution of the Subjects.

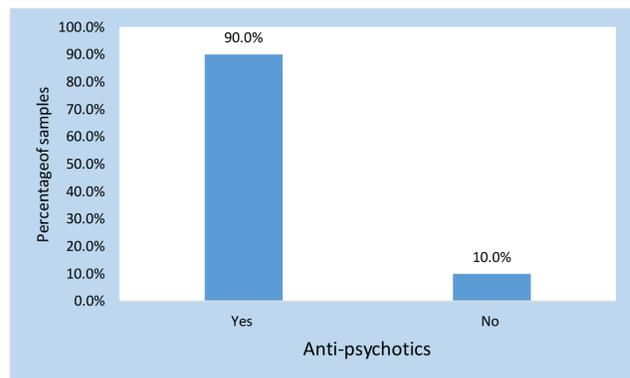


Figure 2: Distribution among the Patients with Schizophrenia- Prescription Pattern of Anti-Psychotics.

Anti-psychotics, 3 (10.0%) were not prescribed Anti-psychotics, which is represented by Figure 2.

### Distribution among the Patients with Schizophrenia- Prescription Pattern of Anti-Depressants.

Out of 30 patients assessed, 5 (16.7%) were prescribed anti-depressants and 25 (83.3%) were not prescribed Anti-depressants, which is represented by Figure 3.

### Distribution among the Patients with Schizophrenia- Prescription Pattern of Mood Stabilizers.

Out of 30 patients assessed 2 (6.7%) were prescribed mood stabilizers, 28 (93.3%) were not prescribed Mood Stabilizers, which is represented by Figure 4.

### Distribution among the Patients with Schizophrenia- Prescription Pattern of Tranquilizers/Hypnotics.

Out of 30 patients assessed 8 (26.7%) were prescribed tranquilizers/hypnotics, while 22 (73.3%) of them were not prescribed tranquilizers/hypnotics, which is represented by Figure 5.

## PRESCRIPTION PATTERN IN PATIENTS WITH SCHIZOPHRENIA

### Distribution among the Patients with Schizophrenia- Prescription Pattern of Anti-Psychotics.

Out of 30 patients assessed, 27 (90.0%) were on

Table 1: Distribution based on gender n=30.		
Sex	Frequency	Percentage
Male	15	50
Female	15	50

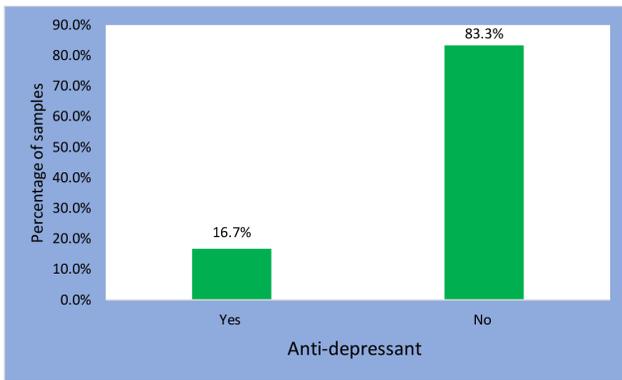


Figure 3: Patients Distribution Based on Prescription Pattern of Anti-Depressants.

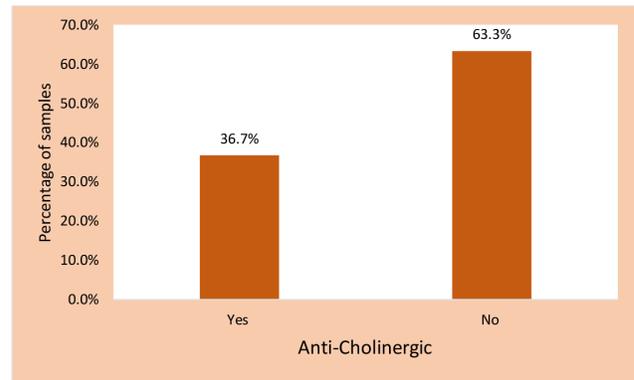


Figure 6: Patients Distribution Based on Prescription Pattern of Anti-Cholinergics.

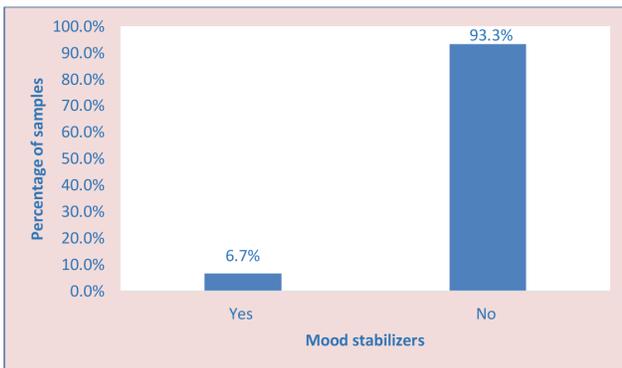


Figure 4: Patients Distribution Based on Prescription Pattern of Mood Stabilizers.

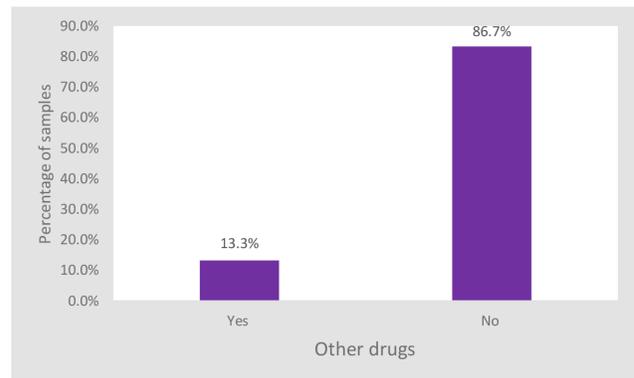


Figure 7: Patients Distribution Based on Other Psychiatric drugs.

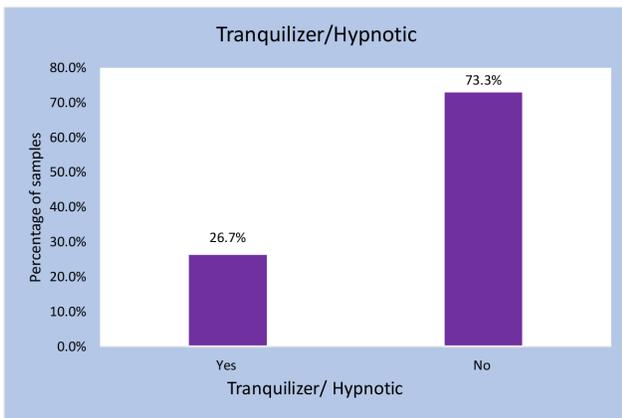


Figure 5: Patients Distribution Based on Prescription Pattern of Tranquilizers /Hypnotics.

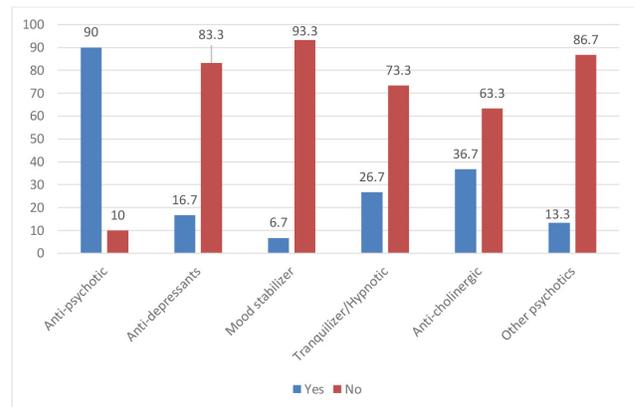


Figure 8: Graphical Representation of Assessment of Prescription Pattern.

### Distribution among the Patients with Schizophrenia-Prescription Pattern of Anti-Cholinergics.

Out of 30 patients assessed, 11 (36.7%) were on Anti-cholinergics, 19 (63.3%) were not prescribed Anti-cholinergics, which is represented by Figure 6.

### Distribution among the Patients with Schizophrenia-Prescription Pattern of Other Psychiatric Drugs.

Out of 30 patients assessed, 4 (13.3%) were on other drugs, 26 (86.7%) were not prescribed other drugs, which is represented by Figure 7. Distribution of psychotropic medications in schizophrenia patients as represented by Figure 8.

### Distribution of the Subjects Based on Prescription Pattern.

Distribution of Subject Based on Number of Drugs Prescribed.

Looking at the complete prescription of patients with schizophrenia, in a sample size of 30 patients, patients were receiving total number of drugs ranging from 1 to 5. Number of patients who were on one, two, three, four and five drugs were 6(20%), 8(26.7%), 9(30.0%), 5(16.7%) and 2(6.7%) respectively, which is represented by Figure 9.

### Effectiveness of Psychotropic Medication on Schizophrenia

Mean, standard deviation, mean difference, *t* value and *p* value of positive and negative syndrome score before and after treatment.

Data presented in the Table 2 revealed that the mean positive and negative syndrome score after treatment (79.10 ± 11.25) is less than the mean positive and negative syndrome score before treatment (124.30 ± 24.22). The *t* value obtained (14.939) higher than the table value at 0.05 level of significance. Therefore there was a significant difference in mean positive and negative syndrome score before and after treatment. Hence the psychotropic medication are effective on schizophrenia, which is represented in Figure 10.

Data presented in the Table 2 revealed that the mean

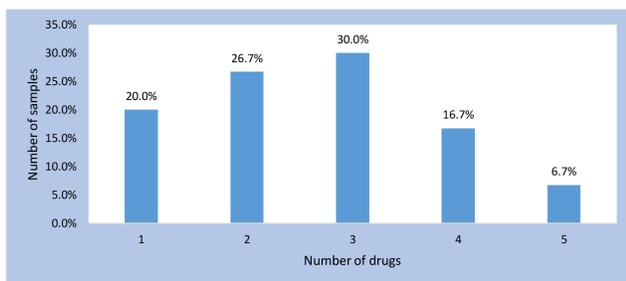


Figure 9: Distribution of Subject Based on Number of Drugs Prescribed.

Table 2: Comparison of scores before and after the Treatment n=30.

	Mean	Standard deviation	Mean difference	<i>t</i> value	<i>p</i> value
Before treatment	124.30	24.22	45.20	14.939	<0.001*
After treatment	79.10	11.25			

t = 2.045, \*= significant.

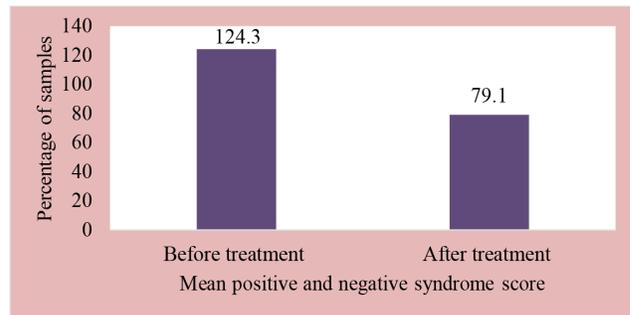


Figure 10: Bar Diagram Representing Mean Positive and Negative Syndrome Score Before and After Treatment.

Table 3: Association of Gender Based on Difference in Score before and After Treatment n=30.

Difference of score before and after treatment	GENDER		$\chi^2$ value	<i>p</i> value
	Female	Male		
<30	7	1	8.389	0.039*
31- 45	5	4		
46 – 60	1	3		
> 60	2	7		

t = 7.815, \*= significant at 0.05 level.

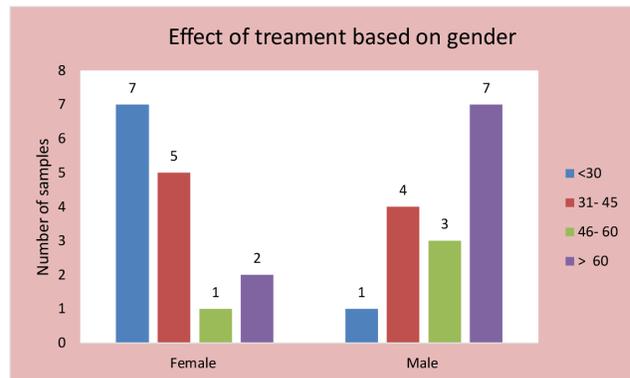


Figure 11: Association of gender based on difference in score before and after treatment.

positive and negative syndrome score after treatment (79.10 ± 11.25) is less than the mean positive and negative syndrome score before treatment (124.30 ± 24.22). The *t* value obtained (14.939) higher than the table value at 0.05 level of significance. Therefore there was a significant difference in mean positive and negative syndrome score before and after treatment. Hence the psychotropic medication are effective on schizophrenia.

### Gender Difference in Response to Psychotropic Medication

Data presented in the Table 3 revealed that the  $\chi^2$  value (8.389, *p* < 0.05) was higher than the table value at 0.05 level of significance. Hence there was a significant association of gender of samples with difference in

score before and after treatment, which is represented in Figure 11.

## DISCUSSION

Schizophrenia is one of the most serious and frightening mental illness.<sup>11</sup> People with schizophrenia see, hear and think differently and are often at a significant loss of contact with reality. Hence, it is a global concern.<sup>12</sup> This discussion is based on the data obtained from 30 patients included in the study based on inclusion and exclusion criteria. This study was carried out with the aim to evaluate the prescribing pattern and effectiveness of psychotropic medication on schizophrenia. In the study conducted in schizophrenia patients, equal number of male subjects 15 (50%) and female 15 (50%) were taken. Based on the age of the subjects, they were divided into four groups such as 18-28, 29-38, 39-48 and >48 years and the number of patients falling into each group were observed as 7 (23.3%), 7 (23.3%), 7 (23.3%) and 9 (30.0%) respectively. Distribution of drugs was studied in 30 patients and among these anti-psychotics were the main therapeutic option for the patients. Anti-psychotics were prescribed to 27 (90%) of the patients. Anti-depressants prescribed to 5 (16.7%) of the patients. Mood stabilizers were prescribed to 2 (6.7%). Tranquilizers/hypnotics were prescribed to 8 (26.7%). Anti-cholinergic were prescribed to 11 (36.7%) of the patients. Other psychiatry drugs were prescribed to 4 (13.3%) of the population. Looking at the complete prescription of patients with schizophrenia, in a sample size of 30, patients were receiving total number of drugs ranging from 1 to 5. Number of patients were who were on monotherapy were 6 (20%), whereas rest 24 (80%) were on polypharmacy. The most common reason for starting multiple medications was to prevent adverse effect of primary drug and second most common reason for polypharmacy was to treat comorbid psychiatric illness. Augmentation of primary drug with another drug from same category was also a reason for polypharmacy.<sup>13</sup> This study was supported by Ashish H. Chepure *et al.*<sup>13</sup>

Effectiveness of psychotropic medication on schizophrenia were assessed using PANSS (Positive and Negative Syndrome Scale) and scores before and after the treatment were obtained. By statistical analysis the mean positive and negative syndrome score after treatment ( $79.10 \pm 11.25$ ) is less than the mean positive and negative syndrome score before treatment ( $124.30 \pm 24.22$ ). Statistical analysis showed a significant reduction in PANSS score after treatment when compared to PANSS score obtained before treatment. The result shows that psychotropic medication are effective in treating patients

with schizophrenia. This study is supported by Peter M. Haddad *et al.*<sup>14</sup>

Gender differences are generally present in schizophrenia, including clinical characteristics, treatment responses, and the global functioning.<sup>11</sup> Based on gender, statistical results shows that the  $\chi^2$  value (8.389,  $p < 0.05$ ) was higher than the table value at 0.05 level of significance. This result shows that improvement is more in male patients compared to female patients. This study is supported by Chengcheng Pu *et al.*<sup>15</sup>

## CONCLUSION

The present study concludes that antipsychotics are the most prescribed drugs in schizophrenia followed by anticholinergic. Psychotropic medications are effective in treating schizophrenia as it was proved by PANSS score analysis. The study report also showed that the impact of drug therapy was more effective in males than in females as it shows a significant improvement in the symptoms of schizophrenia.

## ACKNOWLEDGEMENT

The authors of the study are heartily thankful for the guidance and support received from all the members who contributed to this project, it was vital for the success of the project. They would also like to express their sincere thanks to all the study participants.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**CBT:** Cognitive behavioral therapy; **FGA:** First generation antipsychotics; **PANNS:** Positive and negative syndrome scale; **SD:** Spectrum disorder; **SGA:** Second generation antipsychotics; **SPSS:** Statistical package for social science.

## SUMMARY

Schizophrenia is a complex, chronic mental health disorder characterized by a group of symptoms, including delusions, hallucinations, disorganized speech or behavior, and impaired cognitive ability. The early onset of the disease, along with its chronic course, make it a

disabling disorder for many patients and their families. Disability often results from both negative symptoms (characterized by loss or deficits) and cognitive symptoms, such as impairments in attention, working memory, or executive function. In addition, relapse can also happen as a result of positive symptoms like suspicion, delusions, and hallucinations. A prospective observational study was conducted for a period of 6 months in both inpatients and outpatients of the psychiatry department in Yenepoya Medical College Hospital. A total of 30 cases were collected for the study. Considering the inclusion and exclusion criteria, patients were enrolled after taking a written consent. A suitably designed data collection form was used to collect patient information. PANSS scale was used to assess the effectiveness and impact of drug therapy in gender. Out of 30 patients, 15 patients were male (50%) and 15 patients were female (50%). Patients were separated into four different age group namely, 18-28 years, 29-38 years, 39-48 years and >48 years and the number of patients falling into each group were observed as 7 (23.3%), 7 (23.3%), 7 (23.3%), 9 (30.0%) respectively. Distribution of drugs were studied in 30 patients and among these antipsychotics were the main therapeutic option for the patients. Anti-psychotics were prescribed to 27 (90%) of the patient. Anti-depressants prescribed to 5 (16.7%) of the patient. Mood-stabilizers were prescribed to 2 (6.7%). Tranquilizers/hypnotics were prescribed to 8 (26.7%). Anti-cholinergics were prescribed to 11 (36.7%) of the patients. Other drugs were prescribed to 4 (13.3%) of the population. Patients were receiving total number of drugs ranging from 1 to 5. Number of patients who were on one, two, three, four and five drugs were 6 (20%), 8 (26.7%), 9 (30.0%), 5 (16.7%) and 2 (6.7%) respectively. Statistical analysis showed a significant reduction in PANSS score after treatment when compared to PANSS score obtained before treatment. As a result the present study concludes that psychotropic medication are effective in treating patients with schizophrenia. The present study also showed that psychotropic medications are also more effective in males than in female.

### Author contribution

Authors' role in study concept and design, acquisition of

subjects and or data, analysis and interpretation of data, preparation of manuscript.

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