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SAFETY AND EFFICACY OF OLANZAPINE AND RISPERIDONE IN SCHIZOPHRENIA

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ABSTRACT

Schizophrenia is a mental disorder characterized by disturbances in thought (delusions), perception (such as hallucinations) and behavior (disorganized speech or catatonic behavior), by a loss of emotion responsiveness and extreme apathy and by noticeable deterioration in the level of functioning of everyday life. Antipsychotics have revolutionised psychiatry by allowing significant numbers of patients in long term hospital settings to be discharged and successfully maintained in the community. However these medications are associated with effectiveness and also associated with range of adverse events ranging from mostly annoying to rarely to dangerous. The study is carried to identify the safety and efficacy of Olanzapine and Risperidone in schizophrenic patients.

INTRODUCTION:

Schizophrenia is a serious mental health condition that affects how people think, feel and behave. It may result in a mix of hallucinations, delusions, and disorganized thinking and behavior. Hallucinations involve seeing things or hearing voices that aren't observed by others. Delusions involve firm beliefs about things that are not true. People with schizophrenia can seem to lose touch with reality, which can make daily living very hard. People with schizophrenia need lifelong treatment. This includes medicine, talk therapy and help in learning how to manage daily life activities. Because many people with schizophrenia don't know they have a mental health condition and may not believe they need treatment, many research studies have examined the results of untreated psychosis. People who have psychosis that is not treated often have more-severe symptoms, more stays in a hospital, poorer thinking and processing skills and social outcomes, injuries, and even death. On the other hand, early treatment often helps control symptoms before serious complications arise, making the long-term outlook better. The primary medications used to treat schizophrenia are called Antipsychotics. These drugs don't cure schizophrenia but help relieve the most troubling symptoms, including delusions, hallucinations, and thinking problems. Newer drugs used to treat schizophrenia include: Olanzapine, Quetiapine, Risperidone, Ziprasidone, Aripiprazole etc.

2. AIM & OBJECTIVES

Aim: To Study the safety and efficacy of Olanzapine & Risperidone in Schizophrenia

Objectives:

I. To evaluate the safety and efficacy of Olanzapine and Risperidone in schizophrenia.
II. To monitor adverse drug reactions of Olanzapine and Risperidone in schizophrenia.
III. To compare the safety and efficacy of Olanzapine versus Risperidone in schizophrenia.

3. METHODOLOGY

SOURCE OF DATA: The data required for the study was collected from manasa hospital, Rajahmundry. The case sheets of the patients who are undergoing the treatment with Olanzapine and Risperidone was collected and analyzed**.**

METHOD OF COLLECTION OF DATA:

Study site: Study was conducted in Psychiatric department, Manasa hospital, Rajahmundry.

Study Duration: The study was conducted for a period of 6 months (September 2021 to February 2022).

Study Design: A Randomized case study.

Sample Size: 202

Study Criteria: The study was carried out by considering following criteria.

Inclusion criteria: Patients of all age groups with schizophrenic symptoms, Patients under Olanzapine and Risperidone therapy, Patients having adverse drug reactions with these medications, Patients with other comorbid medical condition.

Exclusion criteria: Patients who need dosage adjustment.

Analysis of data: The data so obtained was statistically evaluated using Statistical Software SPSS.

4. Study procedure: A Randomized case study was carried out at Manasa Hospital, Rajamahendravaram, East Godavari district, after getting ethical clearance from institutional ethics committee and with the prior permission from the mentioned hospital, strictly adhering to the inclusion and exclusion criteria. The patients visited to the hospital were enrolled into the study by considering the study criteria after taking their consent to participate in the study. From the enrolled patients the data was collected from the relevant resources in a suitably designed data collection form which includes: Socio – demographic data, Comorbid medical conditions, adverse drug reactions of the patient, History of schizophrenic symptoms, Medication chart

NEED FOR THE STUDY

In this study, safety and efficacy of Olanzapine and Risperidone in reducing positive, negative & cognitive symptoms and adverse drug reactions of this Olanzapine and Risperidone was analyzed in order to maximize the effect on dopamine and serotonin receptors which maintain the use of these drugs in schizophrenia, which has been shown to be very useful in treating this condition. As a part of this study, we are comparing Olanzapine& Risperidone for safety and efficacy. Olanzapine, Risperidone, Quetiapine, Clozapine are belongs to 2nd generation antipsychotics. 2nd generation antipsychotics also known as atypical antipsychotics, generally have lower risk of extrapyramidal side effects and tardive dyskinesia when compared to 1st generation antipsychotics because 2nd generation antipsychotics have a lower affinity for the dopamine receptors and also block serotonin receptors which reduces these side effects. We carried out our study with the standard dosages available in the market: Doses of drugs are as follows: Olanzapine: 2.5mg, 5mg, 7.5mg, 10mg,15mg,20mg, Quetiapine: 25mg, 50mg, 200mg, Clozapine: 5mg, 25mg, 50mg, 100mg, Risperidone: 0.5mg, 1mg, 2mg, 4mg, Risperidone + trihexyphenidyl: 1.2mg, 2mg, 3mg, 4mg.

5. ETHICAL CONSIDERATIONS:

Recruitment plans: Either literates or illiterates of patients undergoing schizophrenic treatment.

Risk and Compensation: As no experiments are being conducted on the patient there will be no risks and compensation.

Ethical Clearance: The study was applied for ethical clearances approval from the institutions ethical committee, and they approved for the study. The study was approved by Vikas Institutional Ethical Committee (VIPS/DPP/IRB/16/2021-2022).

6. RESULTS AND DISCUSSION

6.1. GENDER: A total of 202 subjects were participated in this study. Out of 202 patients,

101 were enrolled in Risperidone group and remaining 101 in Olanzapine group. In group A (Risperidone), out of 101 patients, 62 were female and 39 were male. In group B (Olanzapine) out of 101 patients, 63 were female and 38 were male. Based on the results in the table 6.1, 61.4% were female and 39% were male in group A. 62.4% were female and 37.6% were male in group B.

6.2. WEIGHT: Based on results in the table 6.2, in group A, out of 101 patients the maximum weight observed is 108kgs and minimum is 34 kg. The mean is 64.3069 and standard deviation is 13.52978. In group B, out of 101 patients the maximum weight is 111kgs and minimum is 36kgs. The mean is 68.5248 and standard deviation is 15.25621.

6.3. DOSE PER DAY

Based on results in the table 6.3, in group A (Risperidone) the maximum dose per day 8mg is given to 8.9 %, 6mg to 8 9%, 4mg to 19.8%, 3mg to 6.9%, 2 mg to 15.8%, 1mg to 23.8% and the initial dose 0.5mg to 15.8%subjects respectively. In group B(Olanzapine) the maximum dose i.e.,30mg is given to 16.8%, 25 mg to 2%, 20mg to 22.8%, 17.50 mg to 1%, 15mg to 12.9%, 12.5mg to 1%, 10 mg to 9.9%, 7.5mg to 5.9%, 5mg to 20.8% and 2.5 to 6.9% subjects respectively.

6.4. TREATMENT SINCE

Based on results in the table 6.4, in group A, the patients who are under Psychiatric drugs since 1year are 13.9%, 2years are 12.9%, 3years are 18.8%, 4years are 7.9%, 5years are 6.9%, 6years are 7.9%, 7years are 5%, 8years are 9.9%,9years are2%, 10years are 3%, 11years are 1%, 12years are 5%, 13years are 1%, 16years are 1%,28years are2%, 31years are 1% and 37years are 1% subjects respectively. In group B, the patients who are under Psychiatric drugs since 1-2years are 18.8%, 3years are 11.9%, 4years are 9.9%, 5years are 4%, 6years are 3%, 7years are 2%, 8years are 10.9%, 9years are 1%, 10years are 4%, 11years are 1%, 12years are 5.9%, 13years are 2%,14years are 3% and 16 to 20years each 1% subjects respectively.

6.5. COMPLICATIONS

Based on the results in the table 6.5, Subjects in group A 1% were complications with Anemia, DM+ arthritis, 2.0% were complications with hypertension, 12.9% were complications with Diabetes, 82.2% were no effected in complication. In group B 1.0% were complications with hypertension, depression, obesity, CVS disease, HTN+ hypothyroidism, DM+ HTN, Urine inconvenience, meningitis+ seizure, post partum psychosis, 5.9% were complications with Diabetes, 2.0% were complications with hypothyroidism, 79.2%were no effected in complication.

6.6. NO OF CHIEF COMPLAINTS

Based on the results in the table 6.6, Chief complaints include Hallucinations, fear, insomnia, anger, irritability, depression, over thinking, crying, self talking, self laughing, self hitting, tension, stress, suicidal thoughts, headache, delusions, confusion, memory loss, involuntary movements, laziness, hyperphagia, anorexia, burning sensation of stomach, palpitations, sleeplessness, suspicious, excessive talking, being silent, poor personal hygiene, social isolation, moving outside, shaking hands, anxiety, apprehension, talking in sleep, shouting, talking bad words, drooling, psychosis, etc,. In group A, 35.6% subjects have more than 4 chief complaints, 31.7% subjects have more than 3 chief complaints, 12.9 % subjects have more than 5 chief complaints, 9.9% subjects have more than 6 chief complaints, 5.9% subjects have more than 7 chief complaints, 2% subjects have more than 9 chief complaints, 1% subjects have more than 2 chief complaints, 1% subjects have more than 8 chief complaints. In group B, 31.7% subjects have more than 3 chief complaints, 21.8% subjects have more than 4 chief complaints, 17.8% subjects have more than 5 chief complaints, 11.9% subjects have more than 6 chief complaints, 10.9% subjects have more than 2 chief complaints, 3% subjects have more than 7 chief complaints, 2% subjects have more than 8 chief complaints, 1% subjects have more than 11 chief complaints.

6.7. DIAGNOSIS

Based on the results in the table 6.7, in group a 94.1% were diagnosed with Schizophrenia, 5.9% were diagnosed with Schizophreniform. In group B 78.2% was diagnosed with Schizophrenia, 2.0%were diagnosed with acute paranoid disease, 8.9%were diagnosed

with Schizophreniform, 4.0%were diagnosed with schizoaffective, 2.0%were diagnosed with Alcohol dependent with Schizophrenia, 1.0%was diagnosed with Schizophrenia with depression, 1.0% was diagnosed with Schizophrenia? OCD, 1.0% were diagnosed with seizure with Schizophrenia, 1.0 % Schizophrenia? Mania? 1.0% was diagnosed with Schizophrenia with dystonia.

6.8. FAMILY HISTORY

Based on the results in the table 6.8, Subjects in group A, 79.2% were no family history and 20.8% were affected by family history. In group B 88.1% were no family history and 11.9% were affected by family history.

6.9. TREATMENT

6.9.1. ANTIPSYCHOTICS

Based on the results in the fig 6.9.1, in group A, 69.3% were prescribed only risperidone, 13.9% were prescribed Risperidone with clozapine, 6.9% were prescribed risperidone with quetiapine, 5.9% were prescribed risperidone with trifluoperazine, 2% were prescribed risperidone with clozapine and trifluoperazine, 1% were prescribed risperidone with haloperidol and clozapine, 1% were prescribed risperidone with clozapine and quetiapine. In group B, 54.5%were prescribed only olanzapine, 32.7% were prescribed olanzapine with trifluoperazine, 8.9% were prescribed olanzapine with clozapine, 3%were prescribed olanzapine with clozapine and trifluoperazine, 1%were prescribed olanzapine with haloperidol and clozapine.

6.9.2. OTHERS 1

Based on the results in the fig 6.9.2, in group A, 4% were prescribed only risperidone, 70.3 % were prescribed risperidone with melatonin and multivitamin, 17.8% were prescribed risperidone with multivitamin, and 7.9 % were prescribed risperidone with melatonin. In group B, 10.9% were prescribed only olanzapine, 54.5% were prescribed olanzapine with melatonin and multivitamin, 27.7% were prescribed olanzapine with multivitamin, and 6.9% were prescribed olanzapine with melatonin.

6.9.3. OTHERS 2

Based on the results in the fig 6.9.3, in group A, 85.1% were prescribed only risperidone, 5.9% were prescribed risperidone with propranolol, 4% were prescribed risperidone fluoxetine, 2% were prescribed risperidone with paracetamol, 1% were prescribed risperidone with disulfiram, 1% was prescribed risperidone with fluoxetine and paracetamol, 1% were prescribed risperidone with bisacodyl. In group B, 86.1% were prescribed only olanzapine, 5.9% were prescribed olanzapine with propranolol, 4% were prescribed olanzapine with fluoxetine, 3% were prescribed olanzapine with paracetamol, and 1% was prescribed olanzapine with disulfiram.

6.10. ADVERSE DRUG REACTIONS

6.10.1. GI ADRS

Based on the results in the fig 6.10.1, in group a 93.1% were affected with Gastrointestinal. 6.9% were no affected with Gastrointestinal. In group B 90.1 %were affected with Gastrointestinal. 9.9%were no affected with Gastrointestinal. The most common ADRs Affecting the Gastrointestinal System such as nausea, vomiting, constipation, slurred speech, increased Appetite, weight gain, indigestion, abdominal pain, dry mouth, increased salivation, dark urine, difficulty swallowing, weakness.

6.10.2. CNS ADRS: Based on the results in the fig 6.10.2, in group A 97.0 % were affected with central nervous system. 3.0 %were no affected with central nervous system. In group B 99.0 %were effected with central nervous system. 1.0 %was no affected with central nervous system. The most common ADRs Affecting the Central Nervous Systems such as Swelling, Drowsiness, Light-headedness Ness, Headache, Restlessness, Anxiety, Confusion, Involuntary Movements, Trouble Breathing, Increased Sweating, Spinning Sensation, Irritability, Agitation, Faintness, Tremors, Tiredness, Blurred vision, Somnolence, Insomnia.

6.10.3. SKELETAL ADRS

Based on the results in the fig 6.10.3, in group A 59.4 %were affected with skeletal system. 40.6% were no affected with skeletal system. In group B 6.9% were affected with skeletal system. 93.1%were no affected with skeletal system. The most common ADRs Affecting the skeletal system such as Joint pain, osteoporosis, Akathisia, shuffling walk.

PATHOPHYSIOLOGY OF SCHIZOPHRENIA

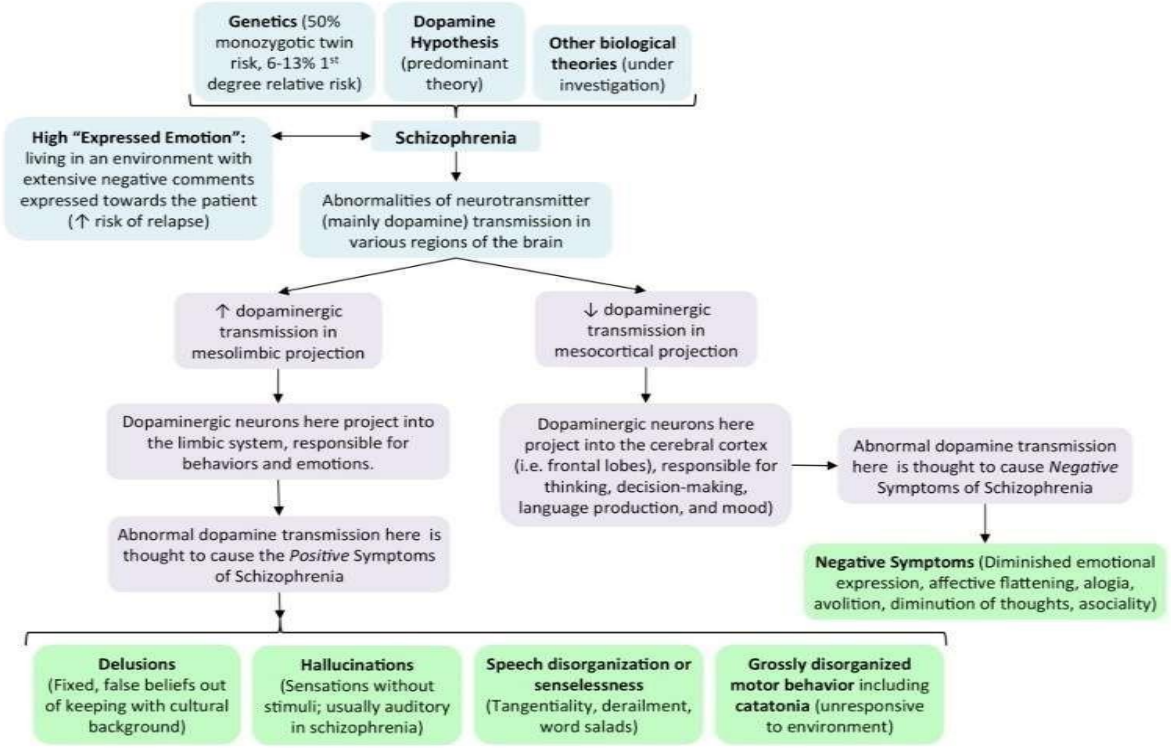

Table-6.1 Comparison of male and female in both groups

	Risperidone		Olanzapine	
Gender	N	%	N	%
Male	39	38.6	38	37.6
Female	62	61.4	63	62.4
Total	101	100.0	101	100.0

Table-6.2 comparison of weight in both groups

	Risperidone	Olanzapine
N	101	101
minimum	34.00	36.00
maximum	108.00	111.00
mean	64.3069	68.5248
Standard deviation	13.52978	15.25621

Table-6.3- Comparison of doses in both groups

Risperidone			Olanzapine		
dose	N	%	dose	N	%
0.5mg	16	15.8	2mg	7	6.9
1mg	24	23.8	5mg	21	20.8
2mg	16	15.8	7mg	6	5.9
3mg	7	6.9	1mg	10	9.9
4mg	20	19.8	12.5mg	1	1.0
6mg	9	8.9	15mg	13	12.9
8mg	9	8.9	17.5mg	1	1.0
			20mg	23	22.8
			25mg	2	2.0
			30mg	17	16.8
Total	101		Total	101	

Table-6.4 comparison of treatment since in both groups

Risperidone			Olanzapine		
Treatment since	N	%	Treatment since	N	%
1 Year	14	13.9	1 Year	19	18.8
2 Years	13	12.9	2 Years	19	18.8
3 Years	19	18.8	3 Years	12	11.9
4 Years	8	7.9	4 Years	10	9.9
5 Years	7	6.9	5 Years	4	4.0
6 Years	8	7.9	6 Years	3	3.0
7 Years	5	5.0	7 Years	2	2.0
8 Years	10	9.9	8 Years	11	10.9
9 Years	2	2.0	9 Years	1	1.0
10 Years	3	3.0	10 Years	4	4.0
11 Years	1	1.0	11 Years	1	1.0
12 Years	5	5.0	12 Years	6	5.9
13 Years	1	1.0	13 Years	2	2.0
16 Years	1	1.0	14 Years	3	3.0
28 Years	2	2.0	16 Years	1	1.0
31 Years	1	1.0	17 Years	1	1.0

Table-6.5 comparison of complications in both groups

Risperidone		
complications	N	%
Anaemia	1	1.0
Hypertension	2	2.0
Diabetis	13	12.9
DM + Arthritis	1	1.0
DM + HTN	1	1.0
NIL	83	82.2
Olanzapine		
Hypertension	1	1.0
Diabetes	6	5.9
Hypothyroidism	2	2.0
Depression	1	1.0
Obesity	1	1.0
Seizures	2	2.0
Typhoid	1	1.0
Cerebro Vascular	1	1.0
HTN+ Hypothyroidism	1	1.0
Myocardial Ischemia	1	1.0
DM + HTN	1	1.0
Urine Inconvience	1	1.0
Meningitis + Seizures	1	1.0

Table-6.6 comparison of no of chief complaints in both groups

Risperidone			Olanzapine		
No of chief complaints	N	%	No of chief complaints	N	%
2	1	1.0	2	11	10.9
3	32	31.7	3	32	31.7
4	36	35.6	4	22	21.8
5	13	12.9	5	18	17.8
6	10	9.9	6	12	11.9
7	6	5.9	7	3	3.0
8	1	1.0	8	2	2.0
9	2	2.0	11	1	1.0

Table-6.7 comparison of diagnosis of both groups

Risperidone			Olanzapine		
Diagnosis	N	%	Diagnosis	N	%
Schizophrenia	95	94.1	Schizophrenia	79	78.2
Schizophreniform	6	5.9	Acute Paranoid Disorder	2	2.0
			Schizophreniform	9	8.9
			schizoaffective	4	4.0
			Alcohol dependent schizo	2	2.0
			Schizophrenia With Depression	1	1.0
			Schizophrenia? OCD	1	1.0
			Seizure With Schizophrenia	1	1.0
			Schizophrenia? Mania?	1	1.0
			Schizophrenia With Dystonia	1	1.0

Table-6.8 comparison of family history of both groups

Risperidone			Olanzapine		
Family history	N	%	Family history	N	%
Father - Acute Paranoid	3	3.0	Mother - Schizophrenia	1	1.0
Father - Schizophrenia	2	2.0	Son - Schizophrenia?	1	1.0
Mother - Schizophrenia	2	2.0	Great Grand Mother Schizo	1	1.0
Son - Schizophrenia	1	1.0	Father - Psychosis	1	1.0
Grand Father Schizo	1	1.0	Grand Father Psychosis	1	1.0
Grand Mother schizo	1	1.0	Grand Mother Psychosis	2	2.0
Mat Aunt schizophrenia	1	1.0	Grandmother - Psychosis	1	1.0
Pat Mother Schizophrenia	1	1.0	Grand Uncle - Psychosis	1	1.0
Mother - Schizo? OCD?	1	1.0	Grand Father - Psychotic	1	1.0
Grand Father - Psychosis	2	2.0	Pat Uncle Acute Psychosis	1	1.0
Grand Mother - Psychosis	1	1.0	Grand Father - Mania	1	1.0
Pat Uncle - Psychosis	1	1.0	NIL	89	88.1
Father - Depression	1	1.0			
Mother Bipolar Disorder	1	1.0			
Father - Paranoid Delusion	1	1.0			
NIL	80	79			

Fig 6.9.1 comparison of treatment in both groups

Risperidone **Olanzapine**

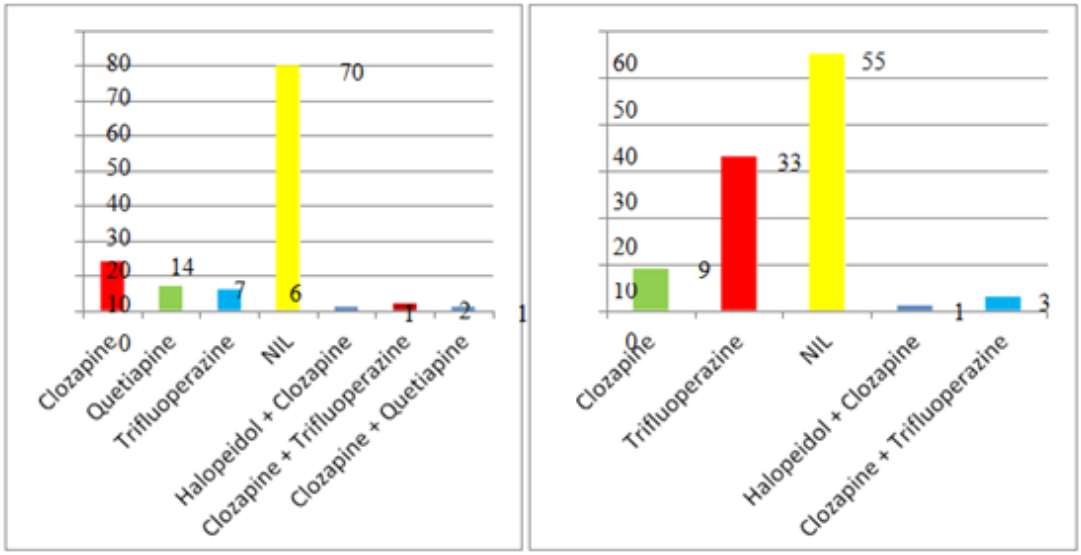

Fig 6.9.2 comparison of treatment in both groups

Risperidone **Olanzapine**

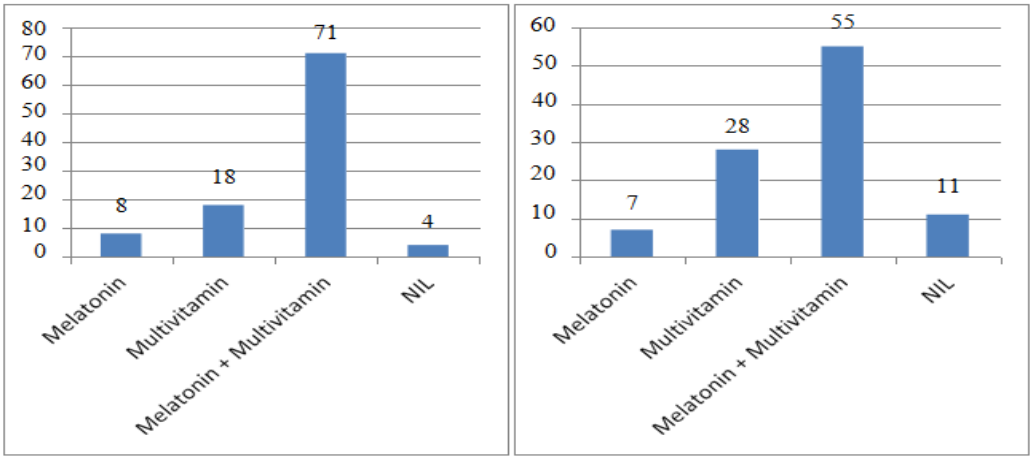

Fig 6.9.3 comparison of treatment in both groups

Risperidone **Olanzapine**

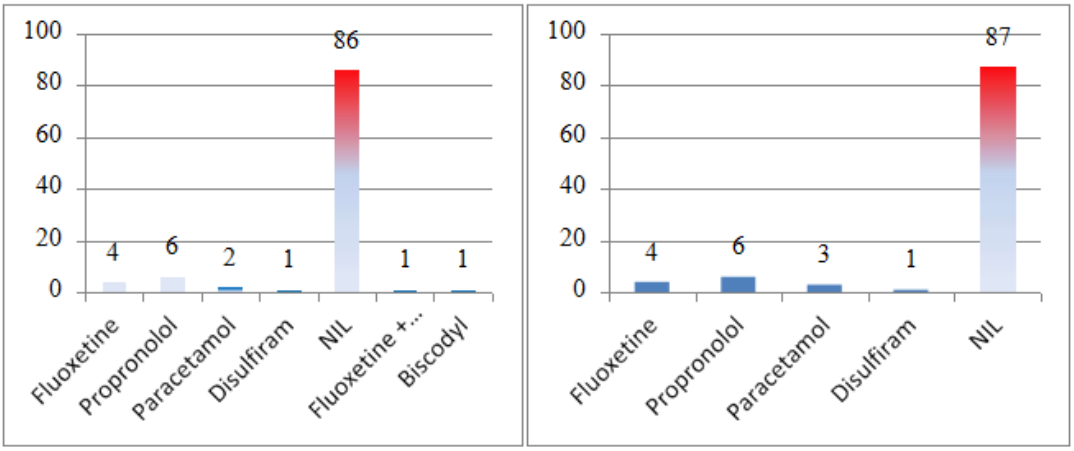

Fig 6.10.1 comparison of GI ADRs in both groups

Risperidone **Olanzapine**

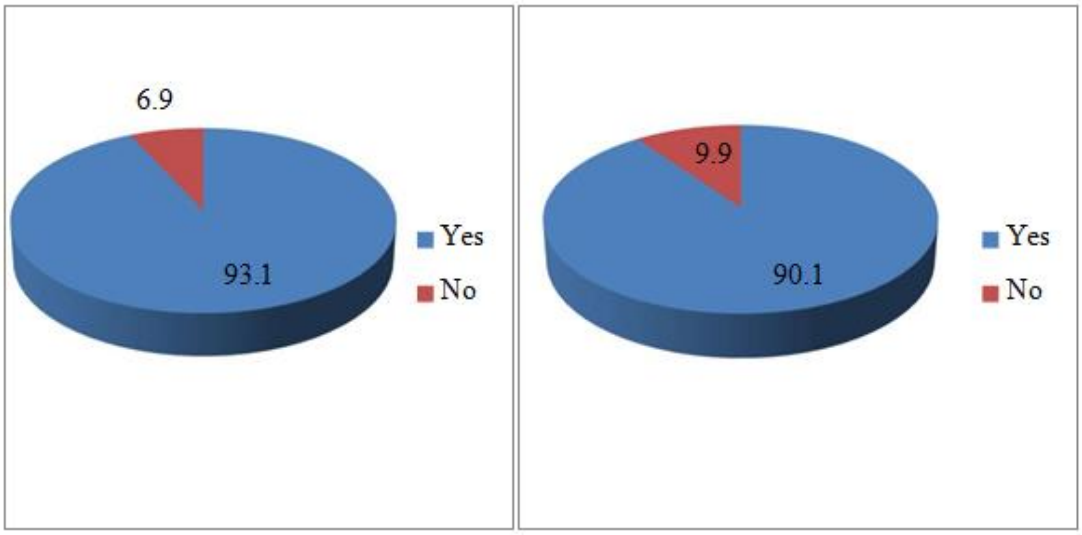

Fig 6.10.2 comparison of CNS ADRs in both groups

Risperidone **Olanzapine**

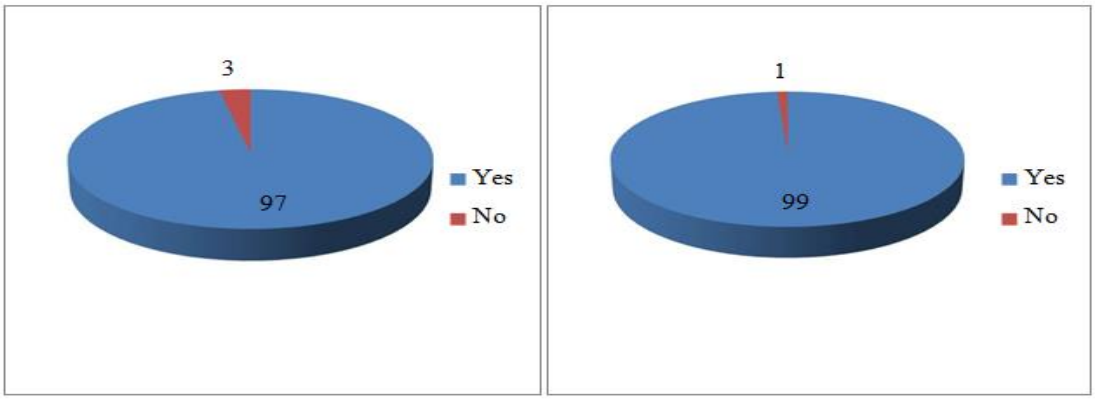

Fig 6.10.3 comparison of skeletal ADRs in both groups

Risperidone **Olanzapine**

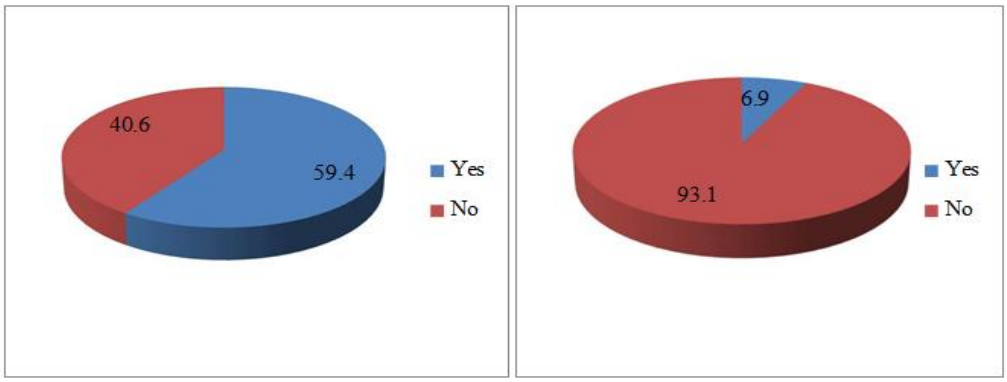

Fig 6.10.4 comparison of CVS ADRs in both groups
Risperidone Olanzapine

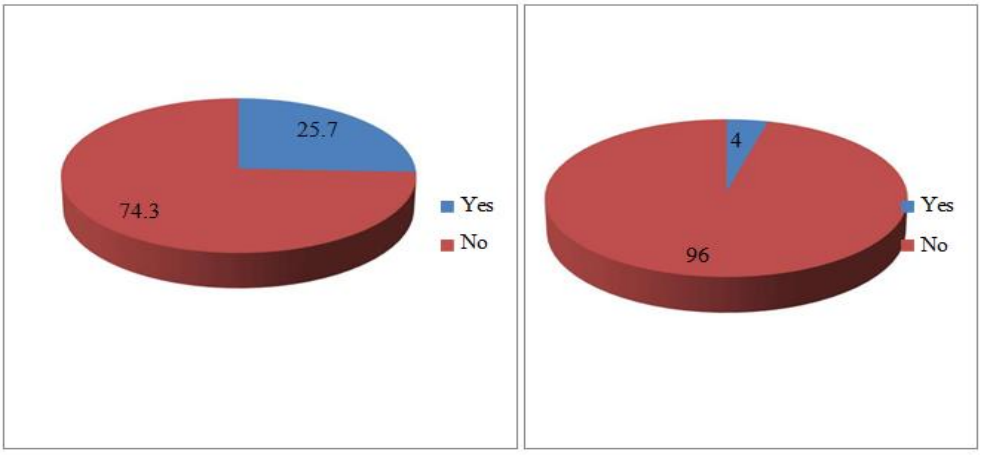

Fig 6.10.5 comparison of skin rashes in both groups
Risperidone Olanzapine

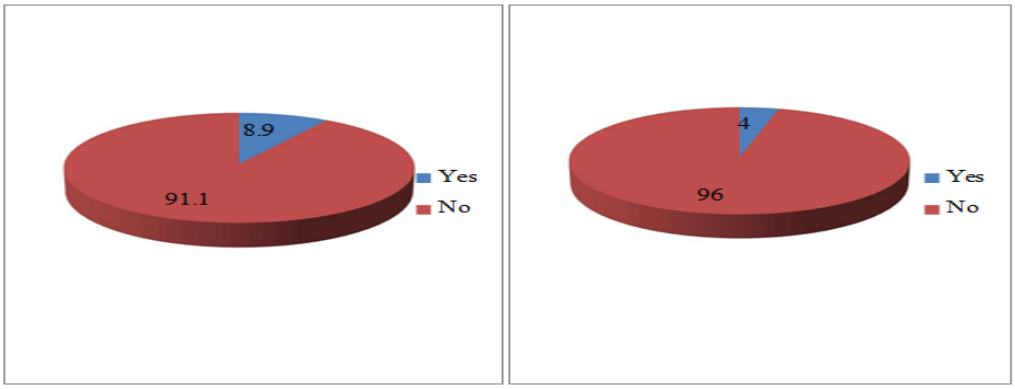

Table-6.11. Comparison of ADRs by ANOVA between groups

	Between groups		
	df	F	significance
GI ADRS	1	.574	.450
CNS ADRS	1	1.015	.315
Skeletal ADRS	1	90.090	.000
CVS ADRS	1	20.701	.000
Skin rashes	1	2.056	.153

6.10.4. CVS ADRS: Based on the results in the fig 6.10.4, in group A 25.7%were affected with cerebrovascular system. 74.3% were no affected with cerebrovascular system. In group B 4.0%were affected with cerebrovascular system. 96.0%were no affected with cerebrovascular system. The most common ADR related to the cardiovascular system such as tachycardia, heart burn.

6.10.5. SKIN RASHES: Based on the results in the fig 6.10.5, in group A 8.9%were effected with skin rashes. 91.1% were no affected with skin rashes. In group B 4.0%were affected with skin rashes. 96.0% were no affected with skin rashes. The most common ADRs affecting the skin rashes. A drug reaction is a skin condition such as an itchy or tender bump, rash, or blister—that develops when the body reacts adversely to medication.

6.11. ANOVA: Analysis of variance (ANOVA) was calculated to identify whether there is any significance difference between ADRs identified in Risperidone group and Olanzapine group. Based on the results of ANOVA, it was evaluated that there is a significance difference between on ADRs only on the Skeletal and CVS in Risperidone group and Olanzapine group. There is no significance difference between skin rashes, GI and CNS ADRs.

CONCLUSION

In this study, prescribing pattern of antipsychotics shows increased usage of second generation (atypical) antipsychotics for treating Schizophrenia. Among the second generation antipsychotics, Olanzapine and Risperidone were commonly prescribed. Most of the patients anguishing several types of schizophrenic symptoms were observed under various age groups. Long term use of Olanzapine and Risperidone shows various adverse effects on GI, CVS, CNS, skeletal and skin. While both atypical antipsychotics were valuable and equally effective in management of schizophrenia, Olanzapine showed more effectiveness and fewer ADRs in comparison with Risperidone. Olanzapine appears to have particular benefit with regard to quality of life. Hence, our study concluded that, Olanzapine has high efficacy and safety and less adverse effects in comparison with Risperidone in treating schizophrenia.

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