

Evaluation of Anti-Psychotics Prescribing Pattern Using Who Indicators in a Tertiary Care Hospital

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Abstract:-

➤ Background Information:

The study of psychotropic drugs prescription pattern gives an image of drug preference and rationality of medication use. Psychological health when neglected for too long becomes crucial to the overall well-being of individuals, societies and countries. Utilization of psychotropic medications, consequences on actual life efficiency in clinical practice need continuous study. Understanding how inseparable psychological and physical health really are, and how their influence on each other is intricate and profound. This study aims to analyze antipsychotic prescriptions and compare whether they confirm to the primary prescribing indicators by WHO.

➤ Methodology:

A Retrospective observational study was performed in the department of Psychiatry in Malla Reddy College of Pharmacy on 101 subjects, who were selected based on inclusion and exclusion criteria. Prescriptions along with participant demographics were documented on the data collection form, the medications were classified accordingly and was then analyzed using simple mean method and percentage method. Statistical clarification was done to decode the unbiased analysis and final conclusions were drawn.

➤ Results:

Out of 101 patients analyzed, 60% were males and 40% were females, 77% were below 50 years. According to the study findings the most commonly used psychotropic drugs were lorazepam (25%) and haloperidol (18.25%). 63.39 is the percentage of antipsychotropic drugs prescribed from Essential Drugs List (EDL). Oral route was the most frequently used route of administration (61%) compared to Intramuscular (23%) and Intravenous (16%). The prescription pattern analysis also reveals that polytherapy was most commonly seen (35%) when compared with monotherapy (1%).

➤ Conclusion:

In the present study, Traditional drugs (TCA's, Atypical and typical antipsychotics) were prescribed more in comparison to Novel antidepressants (SSRIs and SNRIs). Medications were prescribed rationally and judiciously. Though the prescribed percentage of drugs from EDL (Essential Drug List) was high, drug accuracy with the disorder was low, which has to be improved. Percentage of generic drug prescribing is low, where the challenges on frequent use of brand names to be address.

Keywords:- Depression, Antipsychotics, Antidepressants, Post Traumatic Stress Disorder (PTSD), Psychotherapy, Substance Abuse/Dependence, Bipolar Disorder and Anxiety.

I. INTRODUCTION

Subdivision of medicine engrossed on the diagnosis, therapy, and inhibition of psychological, emotional, and behavioral disorders is termed as Psychiatry. WHO issued a statement saying that Mental health – neglected for far too long – is crucial to the overall well-being of individuals, societies and countries and must be universally regarded in a new light.[1]

A psychiatrist is a medical practitioner who is a pundit in mental health, including drug abuse disorders. Psychiatrists are trained to assess mutually the psychological and somatic aspects of psychological complications.

Individuals search for psychiatric support for many reasons. The complications can be sudden, such as a panic disorder, fearsome visions, thoughts of self-destruction, or hearing "vocal sounds." Or they may be more longstanding, such as emotional state of grief, desperation, or anxiety that certainly not seem to lift or complications running, affecting daily life to feel crushed or uncontrollable [2].

A. Psychotropic Prescriptions

Psychotropic prescriptions perform a significant part in the treatment of several mental illnesses. Counting the significance of psychotropic drugs in the treatment of numerous psychiatric illnesses, nearly complete management guidelines prepared by several scientific organizations offer information on what way to use psychotropic medications in the treatment of a specific disorder. However, the matter is frequently debated that several patients receive irrational treatments, which either do not offer any advantage to the patients or truly harm them. In a similar way, understanding the prescriptions can moderately provide us with data about the type of care received by patients. Plentiful studies on psychotropic drug prescriptions in the West have assessed the national prescription forms and have furthermore observed the prescription forms in general practice, professional care, emergency services, and extreme of ages. Research has also observed the prescription patterns exact to some psychiatric disorders like bipolar disorder, depression, and psychosis. In modern times, numerous studies of various other Asian countries have analyzed the prescription patterns too, in which information from limited centers in India has also been involved. [3]

B. Drug Utilization Research (Dur)

In reference to the world health organization (WHO) drug utilization research is “the marketing, distribution, prescription and usage of drugs in a society, with special emphasis on the resulting medical, social and economic consequences.” DUR can be descriptive or analytical type. The latter is associated with connection of the “data on drug utilization to figures on morbidity, result of the treatment and quality of care with the final goal of identification if the therapy of the drug used is rational or not.” As the blot concerned with mental illness is rising with researchers that correlate the cause or the mental illness with different biologically active agents, the value of psychotropic drugs has come into focus. Looking back to the past times, there has been a great change in the psychopharmacology using new molecules and static dose amalgamations developing time to time, claiming to have greater efficacy. So, presently the psychiatrists going through an arrangement of psychotropic drug inventory to select from which resulted in variation of the pattern of prescription for particular illnesses, that may not always be on track with the guidelines including the increased concern of delayed adverse effects and polypharmacy. An important role is played by prescription pattern monitoring studies (PPMS), which behave as “tool for evaluating the prescribing, dispensing and distribution of the drugs.”[5]

Psychopharmacological drugs or Psychotropic agents are the ones which show major effects on mental processes and are used in the dealing of mental disorders. For conducting psychiatric disorders, diverse types of psychotropic drugs are obtainable. In the last 20 years, the progress of new drugs like selective serotonin reuptake inhibitors (SSRIs) and atypical antipsychotics have notably changed the therapy involved.

C. Psychiatric Disorders

Psychiatric disorders system a notable public health importance. The ascending and demanding field of psychopharmacology is continually looking for newly developed and sophisticated drugs for the treatment of psychiatric disorders. So, the psychiatrists are unboundedly exposed to the newly presented drugs that claim to be efficacious and harmless. But these drugs come with high price and thus being high-priced to the most of patients especially in the emerging countries. Despite being incredibly impactful in psychiatry, these drugs need permanent study for the employment in definite clinical practice, efficacy, and safety in realistic situations. Due to inadequate data accessible on their use in the people of central India, the current study was done to notice and show the pattern of psychotropic medication utilization in the psychiatric OPD (outpatient department) [7].

➤ *Psychiatric disorders signs and symptoms examples of include:*

- Disorganized thinking
- Decreased ability to think
- Deep, constant sadness, or feeling “low”
- Lack of ability to manage usual stress and problems

- Difficulty in understanding circumstances and other people
- Pulling out oneself from others and from actions you used to adore and enjoy
- Excessive exhaustion, lessened energy, or napping problems
- Potent state of mind to fear, worry, or guilt
- Excessive mood deviations, from highs to lows, often fluctuating very rapidly
- Disconnecting from realism (delusions), paranoia (the belief that others are “out to get you,”) or hallucinations (sighting things that aren’t there)
- Noticeable variations in ingestion habits.
- A change in sexual desire.
- Drugs or alcohol abuse
- Extreme anger, hostility, and/or violence
- Hopeless suicidal thoughts

II. MATERIALS AND METHODS

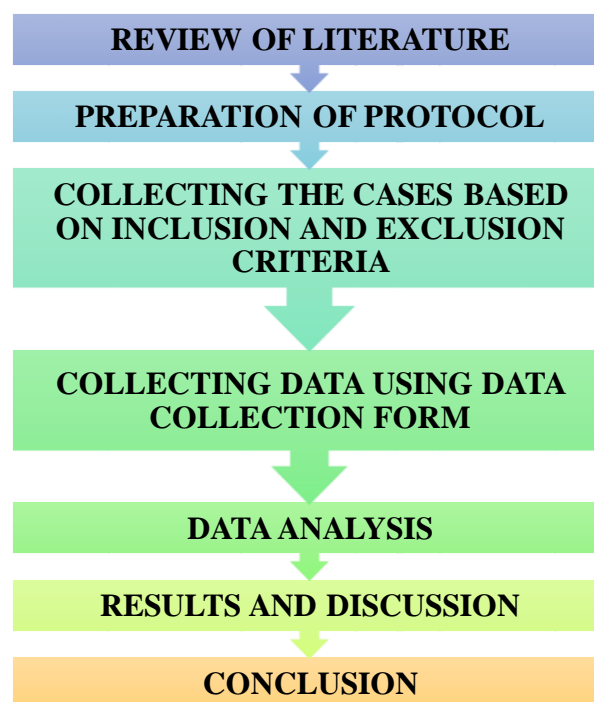
A. Materials

The data was collected in specially designed pro-forma. A well-designed case record form was used to collect the data of the patients and information regarding, age, sex, diagnosis, drug profile and relevant data was collected.

B. Study Instruments

- **PATIENT PROFORMA FORM: (DATA ENTRY FORM)** – The collected data was incorporated in pre designed patient proforma and relevant data is collected.
- National list of Psychotherapeutic Essential medicines in India 2011
- WHO Prescribing Indicators that is Drug use indicators.

C. Plan of Work:



D. Methods

- **STUDY DESIGN** - The study design was a Retrospective observational cross-sectional study.
- **SAMPLE SIZE** - In this study 101 patient's profiles are collected retrospectively from the in-patient department of Psychiatry.
- **STUDY PERIOD** - This study is conducted over a period of 6 months.
- **STUDY AREA** - The study was conducted in Malla Reddy Hospital which is a tertiary care teaching hospital, located at Suraram.
- **STUDY METHOD** - The method of study here includes Simple mean method and Percentage method.

E. Study Criteria➤ *Inclusion Criteria*

- The inpatients who are admitted in to the Psychiatry ward after referral from outpatient department.
- All those who have been diagnosed with medical complications.
- Age above 12 years.

➤ *Exclusion Criteria*

- Pregnant women
- Subjects under age 12 were excluded

F. Materials Used

- Data Collection Form (DCF)
- WHO Prescribing Indicators
- National list of Psychotherapeutic Essential medicines in India 2011

G. Study Procedure

- Based on the inclusion and exclusion criteria subjects are chosen.
- Data was collected and analyzed.

H. Methodology

- Study has been conducted in the Department of Psychiatry in Malla Reddy Hospital.
- Subjects has been selected based on the inclusion and exclusion criteria.
- The study duration will be for 6 months.
- Participant's prescription and demographic details will be recorded on case record form.
- The drugs will be categorized accordingly.
- Data analysis will be done.
- Final discussion and conclusion will be made regarding the Prescription pattern analysis in the department of Psychiatry.

III. RESULTS AND DISCUSSION*A. Gender-wise distribution of psychiatric illness*

TABLE 3.1 Gender-wise distribution of psychiatric illness

GENDER	SUBJECTS (n=101)	PERCENTAGE
MALE	61	60%
FEMALE	40	40%

TABLE 3.1

FIGURE 3.1 Gender wise distribution of psychiatric illness-(n=101)

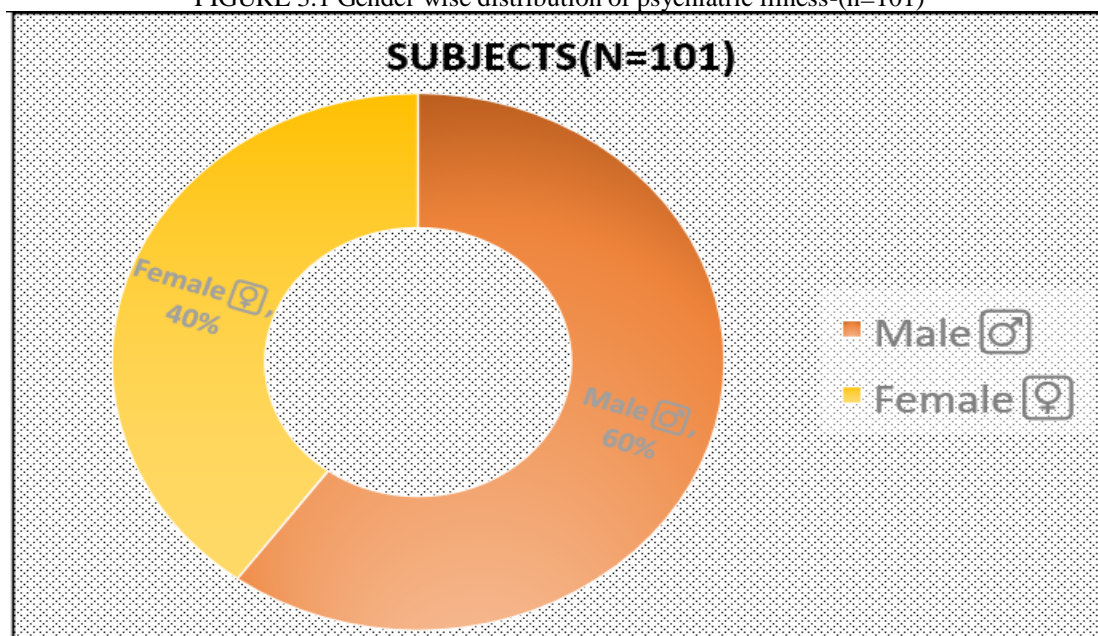


FIGURE.3.1

➤ *Discussion:*

In this study findings, out 101 subjects, the study probability reveals that the highly affected percentage 60 belongs to men and remaining 40 percent were female.

B. Age-wise distribution of Psychiatry illness(n=101)

TABLE 3.2 Age-wise distribution of Psychiatry illness(n=101)

AGE	SUBJECTS (n-101)	PERCENTAGE
BELOW 20	4	4%
21-30 YEARS	19	19%
31-40 YEARS	30	29%
41-50 YEARS	25	25%
51-60 YEARS	18	18%
ABOVE 60	5	5%

TABLE 3.2

FIGURE 3.2 Total number of subjects according to Age-wise distribution of illness (n=101)

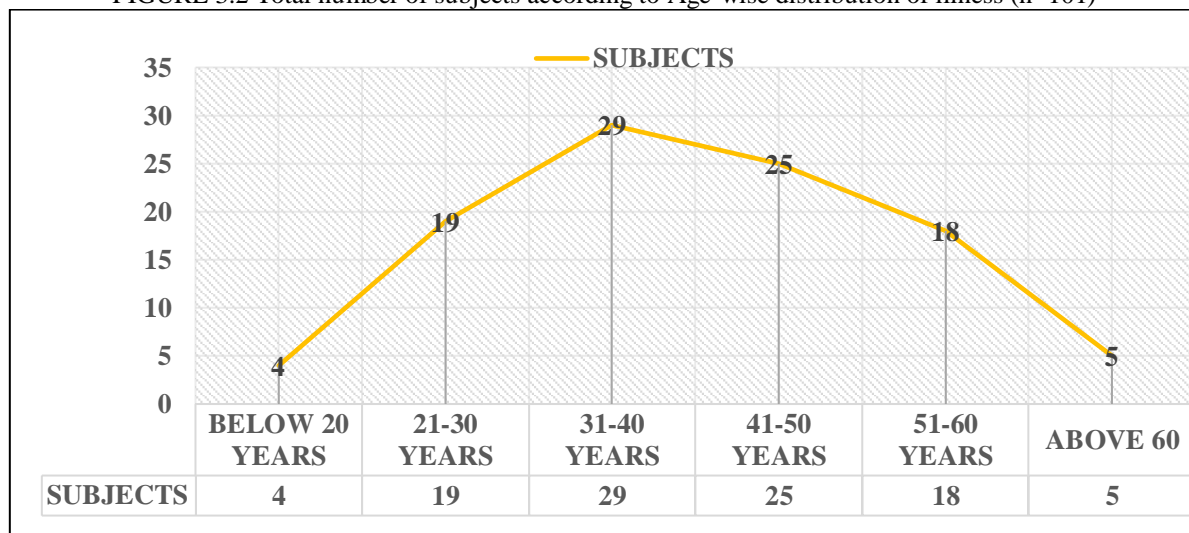


FIGURE 3.2

➤ *Discussion:*

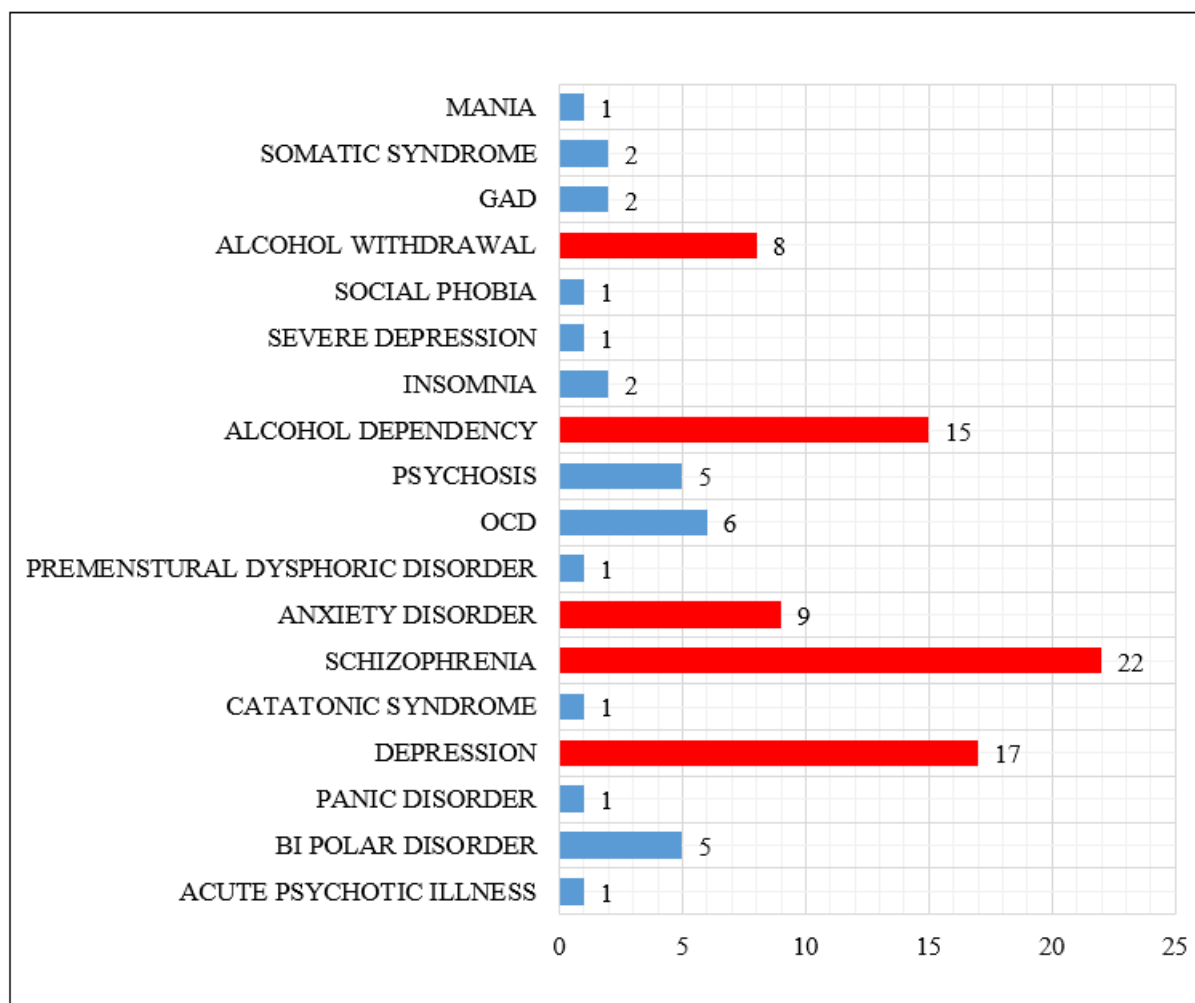
In this study regarding the age groups of different patients, out of 101 study population, 31-40 years are seen as 29%, 41-50 years seen as 25%, 51-60 years are seen as 18%, 21-30 years are seen as 19% and above 60 years and below 20 years are seen as 5% and 4% respectively.

C. Diagnosis-wise distribution of study population(n=101)

TABLE 3.3 Diagnosis-wise distribution of study population(n=101)

DISORDER	PRESCRIPTIONS WITH SPECIFIC DISORDERS
ACUTE PSYCHOTIC ILLNESS	1
BI-POLAR DISORDER	5
PANIC DISORDER	1
DEPRESSION	17
CATATONIC SYNDROME	1
SCHIZOPHRENIA	22
ANXIETY DISORDER	9
PREMENSTRUAL DYSPHORIC DISORDER	1
OCD	6
PSYCHOSIS	5
ALCOHOL DEPENDENCY	15
INSOMNIA	2

SEVERE DEPRESSION	1
SOCIAL PHOBIA	1
ALCOHOL WITHDRAWAL	9
GAD	2
SOMATIC SYNDROME	2
MANIA	1

TABLE 3.3**FIGURE 3.3** Diagnosis-wise distribution of study population (n=101)**FIGURE 3.3**

➤ Discussion

In this study about diagnosis, out of 101, highest number of cases are seen in schizophrenia, depression, alcohol dependency, anxiety and alcohol withdrawal. Specifically, 22 individuals were diagnosed with schizophrenia, 17 with depression, 15 with alcohol dependency, 9 with alcohol withdrawal and 8 with anxiety disorder. GAD, social phobia, severe depression, insomnia, psychosis, OCD, premenstrual dysphoric disorder, catatonic disorder, panic disorder, bipolar disorder and acute psychotic illness were diagnosed for only between 1 and 6 times respectively.

D. Prescribing prevalence of individual psychotropic drugs

TABLE 3.4 Prescribing prevalence of individual psychotropic drugs

DRUG CLASS	DRUGS	NUMBER OF DRUGS (n=252)	PERCENTAGE
TYPICAL ANTIPSYCHOTICS (n=46)	HALOPERIDOL	46	18.25

ATYPICAL ANTIPSYCHOTICS (n=51)	LURASIDONE	1	0.39
	MACROBID	1	0.39
	QUETIAPINE	3	1.19
	RISPERIDONE	25	9.92
	SEROQUEL	2	0.79
	OLANZAPINE	15	5.95
	ARIPIRAZOLE	2	0.79
	CLONAZEPINE	2	0.79
ANTI-ANXIETY (Benzodiazepine) (n=81)	LORAZEPAM	63	25
	CHLORDIAZEPOXIDE	12	4.76
	CLONAZEPAM	6	2.38
Selective serotonin reuptake inhibitor (SSRI) antidepressants (n=36)	PAROXETINE	2	0.79
	ESCITALOPRAM	21	8.33
	FLUOXETINE	11	4.36
	FLUVOXAMINE	2	0.79
Serotonin-norepinephrine reuptake inhibitor (SNRI) antidepressants (n=60)	DULOXETINE	6	2.38
TRICYCLIC ANTIDEPRESSANTS (n=18)	AMITRIPTYLINE	3	1.19
	MIRTAZAPINE	13	5.15
ANTI-EPILEPTICS (n=16)	LEVETIRACETAM	2	0.79
	DIVALPROEX	14	5.55

TABLE 3.4

➤ *Discussion:*

- This study is regarding the prescribing frequency of individual psychotropic drugs, summation of psychotropic drugs prescribed equals to **252**, where **Lorazepam** shows the highest percentage of **25** followed by **Haloperidol**, **Risperidone** and **Escitalopram** with percentages **18.25**, **9.92** and **8.33** respectively.
- Other drug percentages include lurasidone with 0.39, Macrobid with 0.39, Quetiapine with 1.19, Seroquel with 0.79, Olanzapine with 5.95, Aripiprazole with 0.79, Clonazepam with 0.79, Chlordiazepoxide with 4.76, Clonazepam with 2.38, Paroxetine with 0.79, Fluoxetine with 4.36, Fluvoxamine with 0.79, Duloxetine with 2.38, Amitriptyline with 1.19, Mirtazapine with 5.15, levetiracetam with 0.79 and Divalproex with 5.55 respectively.

➤ *Prescription-wise distribution of anti-psychotropic drugs in the study population*

TABLE 3.4.1.1. Prescription-wise distribution of anti-psychotropic drugs in the study population

PSYCHIATRIC DRUG CLASSIFICATION	SUBJECTS N=101	PERCENTAGE
ANTI DEPRESSANTS	37	36
ANTI PSYCHOTICS	28	28
ANTI ANXIETY	14	14
ANTI EPILEPTICS	7	7
ANTI CHOLINERGICS	3	3
ALPHA ADRENERGIC BLOCKERS	3	3

TABLE 3.4.1

FIGURE 4.4.1 Prescription-wise distribution of anti-psychotropic in the study population

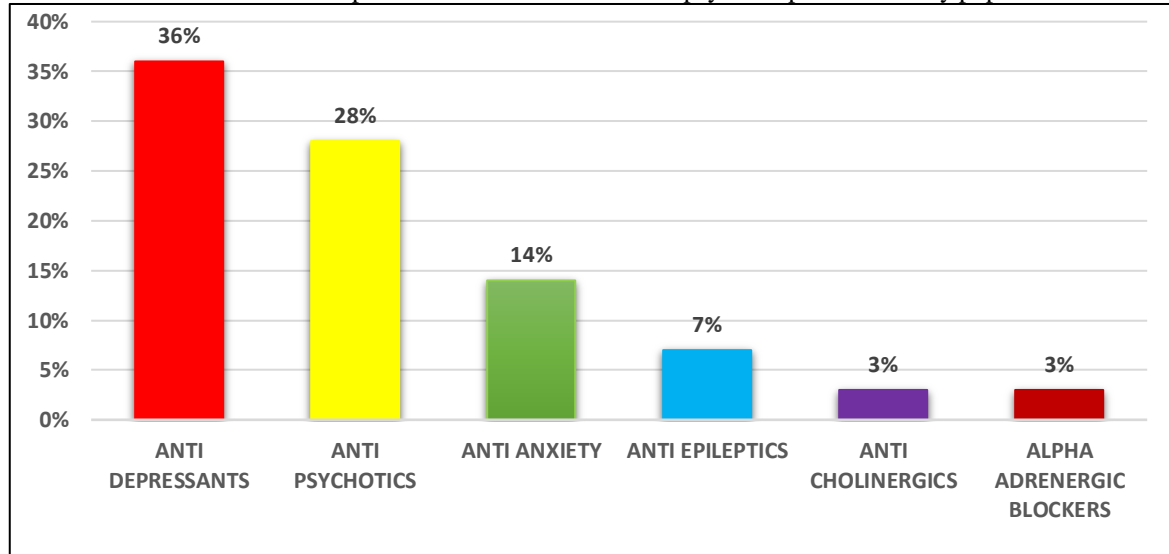


FIGURE 3.4.1

➤ *Discussion:*

This study is done regarding the drug classification based on the anti-psychotropic drugs prescribed to the total number of subjects (n=101), where 36% of anti-depressants, 28% of anti-psychotics, 14% of anti-anxiety medications, 7% of anti-epileptics, 9% of anti-histamines and 3% of anticholinergics and alpha-adrenergic blockers respectively.

E. Distribution of routes of drug administration as per the drugs prescribed.

TABLE 3.5 Distribution of routes of drug administration as per the drugs prescribed.

ROUTE	SUBJECTS (n– 454)	PERCENTAGE
ORAL	277	61%
INTRAVENOUS	103	23%
INTRAMUSCULAR	74	16%

TABLE 3.5

FIGURE 4.5 Distribution of routes of drug administration as per the drugs prescribed

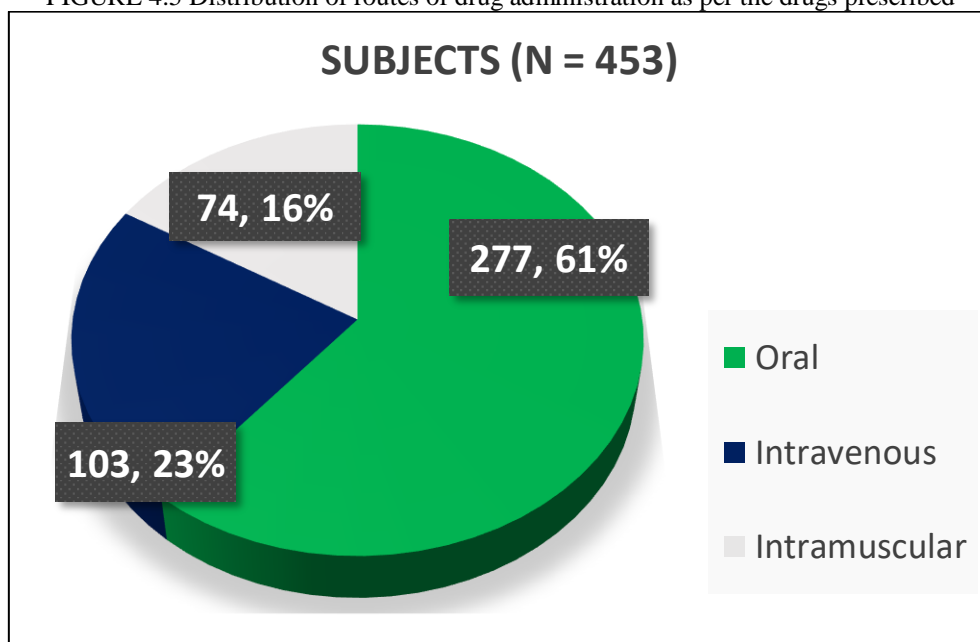


FIGURE 3.5

➤ *Discussion:*

This study is regarding the routes of drug administration as per the prescribed drugs, where sample includes number of drugs prescribed i.e., (n=454), where 61% were given by oral route, Intravenous route for 23% and intramuscular for 16% of the subjects.

F. *Prescribing patterns showing the practice of monotherapy and polytherapy.*

TABLE 3.6 Prescribing patterns showing the practice of monotherapy and polytherapy.

THERAPY	SUBJECTS (n=101)	PERCENTAGE
MONOTHERAPY	1	1%
POLYTHERAPY	35	35%
OTHERS	65	64%

TABLE 3.6

FIGURE 3.6 Prescribing patterns showing the practice of monotherapy and polytherapy.

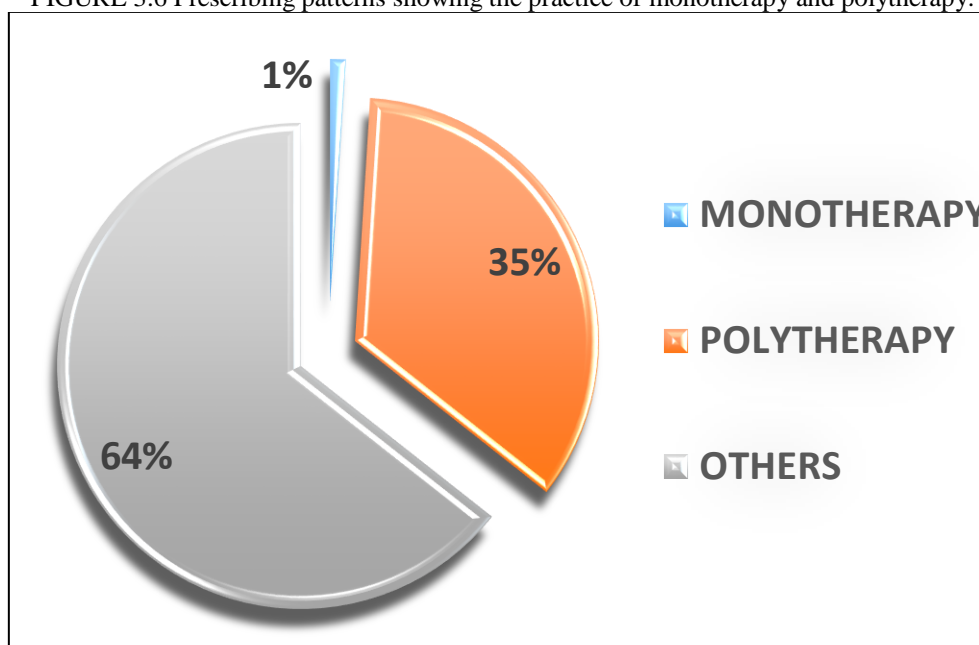


FIGURE 3.6

➤ *Discussion:*

This study is regarding the choice in route of drug therapy, Among the sample size of 101. 1% of them have undergone Monotherapy. 35% of the study population was given Polytherapy and the remaining 64% were categorized as others.

G. *Analysis of prescriptions using WHO Drug-use indicators*

TABLE 3.7 Analysis of prescriptions using WHO Drug-use indicators

DRUG USE INDICATORS	RESULTS
1. Average number of drugs per prescription	4.525 (i.e., n=453 in 101 subjects)
2. Average number of anti-psychotropic drugs per prescription	3.37 (i.e., n=336 in 453 drugs)
3. Percentage of psychotropic drugs prescribed by generic name	28.91 (i.e., 131 out of 453; n=131)
4. Percentage of injectable drugs prescribed	39.07 (i.e., 177 out of 453; n=177)
5. Percentage of psychotropic drugs prescribed from Essential drug list.	63.39 (i.e., 213 out of 336)

TABLE 3.7

➤ Discussion

1. **Average number of drugs per encounter:** This study reveals the average number of drugs per encounter was found to be **4.5%** in 101 prescriptions. Slight polypharmacy was observed in relevance to the patient condition.
2. **Percentage of drugs prescribed by generic name:** **28.9%** of drugs were prescribed by generic name, which is 131 out of 453 drugs were prescribed by generic name.
3. **Percentage of encounter with an anti-psychotics prescribed:** **3.37%** is the average number of anti-psychotropic drugs per prescription in 101 subjects.
4. **Percentage of encounters with an injection prescribed:** In this study 177 medications were given parenterally out of 453 total psychotropic drugs, which contributes **39.07%** and 276 drugs were given orally.
5. **Percentage of drugs prescribed from essential drugs list or formulary:** **63.39%** is the average amount of anti-psychotropic drugs prescribed from essential drugs list or formulary in 101 subjects.

H. Psychiatric and supportive drugs prescribed per prescription

TABLE 3.8 Psychiatric and supportive drugs prescribed per prescription

NUMBER OF DRUGS	NUMBER OF SUBJECTS GIVEN PSYCHIATRIC DRUGS	NUMBER OF SUBJECTS GIVEN SUPPORTIVE DRUGS
1	11	8
2	16	32
3	7	21
4	4	7
5	3	11
6	2	13
7	0	4
8	1	1

TABLE 3.8

FIGURE 3.8 Graph according to psychiatric and supportive drugs prescribed per prescription in the study population

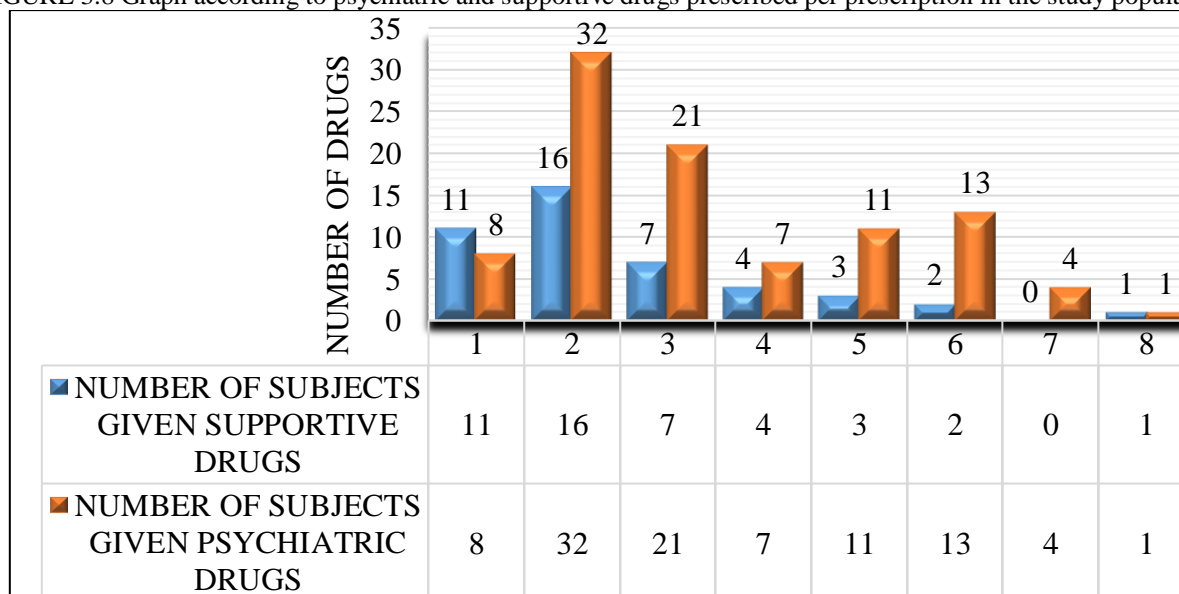


FIGURE 3.8

➤ Discussion

This study is regarding the number of Psychiatric and supportive drugs prescribed per encounter, where sample size includes 101 subjects in which least number of psychiatric drugs i.e., 1,2,3 and 4 were given to 11,16,7 and 4 subjects and supportive drugs to 8,32,21 and 7 subjects respectively. The highest number of 5,6,7 and 8 psychiatric drugs were administered to 3,2,0 and 1 subjects and supportive drugs to 11,13,4 and 1 subject respectively

I. Distribution according to supportive drug category (n=24)

TABLE 3.9 Distribution according to supportive drug category (n=24)

SUPPORTIVE DRUG CLASSIFICATION	NUMBER OF DRUGS	PERCENTAGE
ANTI PYRETICS	3	12.5
ANTIBIOTICS	2	8.33
ANTI SPASMODIC	2	8.33
ANTI OXIDANTS	2	8.33
ANTI VERTIGO AGENTS	1	4.16
VITAMIN SUPPLEMENTS	4	16.66
ANTI FUNGAL AGENTS	1	4.16
URINARY ALKALINIZERS	1	4.16
ANTI INFLAMMATORY	2	8.33
BRONCHODILATORS	1	4.16
ANTI ULCER	1	4.16
H1 ANTAGONIST	1	4.16
PROTON PUMP INHIBITORS	1	4.16
5HT3 ANTAGONIST	1	4.16
GANGLIONIC BLOCKING AGENT	1	4.16

TABLE 3.9

FIGURE.3.9 Distribution of drugs according to supportive drug category

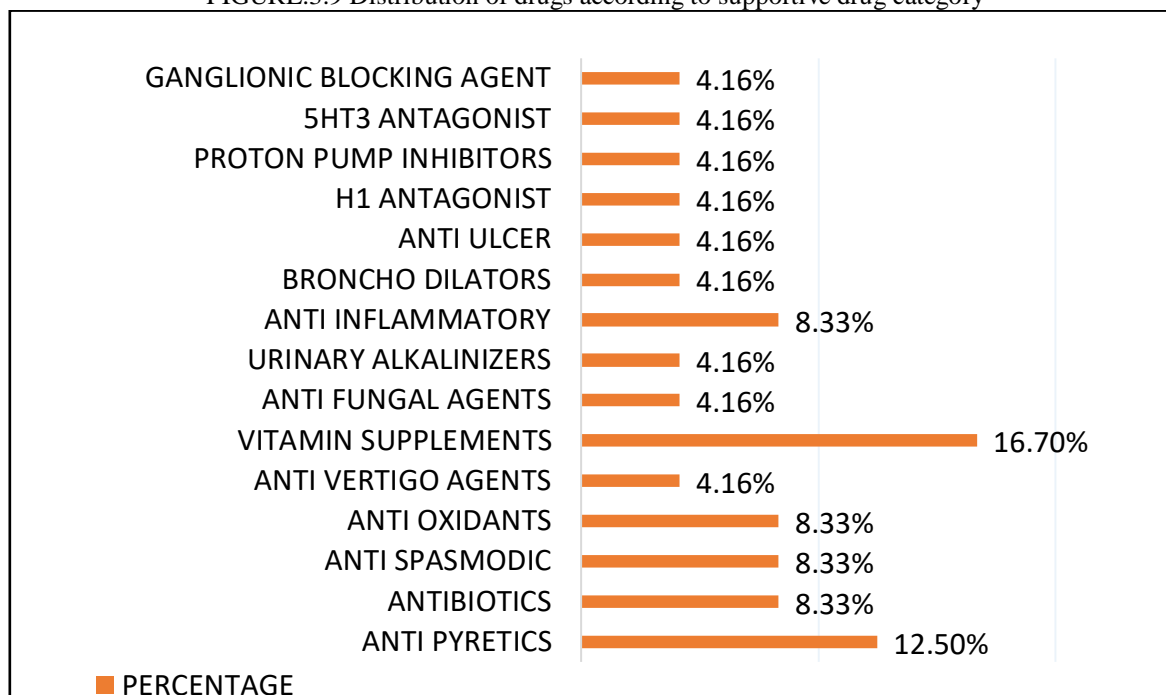


FIGURE 3.9

➤ Discussion:

- This study is done regarding the Supportive drug therapy, in the sample size of (n=101), where the highest of 16.7% were vitamin supplements and the least were urinary alkalinizers, anti-fungal, bronchodilators, antiulcer, h1 antagonist, proton pump inhibitors, 5HT3 antagonists and ganglionic blocking agents with 4.16% respectively.
- Others include 12.5% of antipyretics, 8.33% of antibiotics, anti-spasmodic, antioxidants and anti-inflammatory agents.

J. Distribution according to most commonly seen and least commonly seen disorders

TABLE 3.10 Distribution according to most commonly seen and least commonly seen disorders –

DISORDERS	NUMBER OF CASES
MOST COMMONLY SEEN SCHIZOPHRENIA	22
LEAST COMMONLY SEEN ACUTE PSYCHOTIC ILLNESS	1
PANIC DISORDER	1
CATATONIC SYNDROME	1
PREMENSTURAL DYSPHONIC DISORDER	1
SEVERE DEPRESSION	1
SOCIAL PHOBIA	1
MANIA	1

TABLE 3.10

FIGURE 3.10 Distribution according to most commonly seen and least commonly seen disorders –

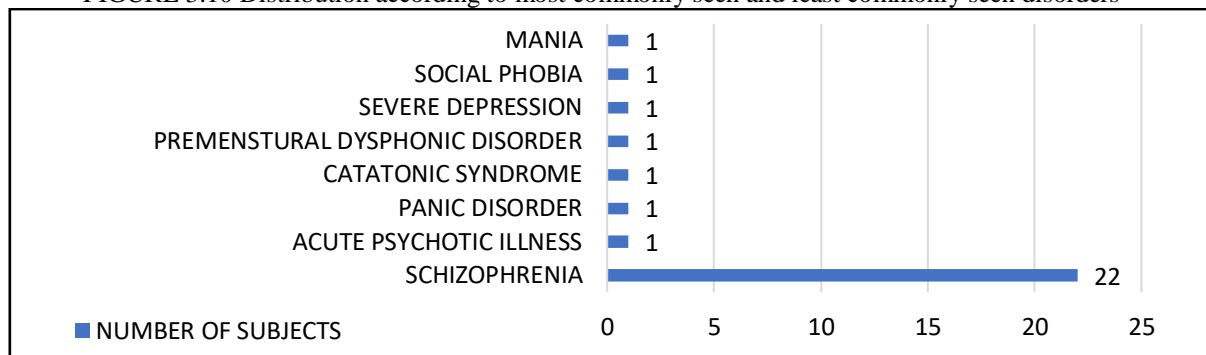


FIGURE 3.10

➤ *Discussion:*

This study is done regarding the most and least commonly seen disorders where 22 are affected with schizophrenia, which is found to be the most commonly seen one and the rest 7 which include the following disorders like, acute psychotic illness, panic disorder, catatonic syndrome, pre-menstrual dysphonic disorder, severe depression, social phobia and mania respectively.

K. Distribution of subjects according to schizophrenia disorder based on their age

TABLE 3.11 Distribution of subjects according to schizophrenia disorder based on their age

AGE	SUBJECTS
10-20 YEARS	0
20-30 YEARS	4
31-40 YEARS	8
41-50 YEARS	4
51-60 YEARS	5
ABOVE 60 YEARS	0

TABLE 3.11

FIGURE 3.11 Distribution of subjects according to Schizophrenia disorder based on their age-

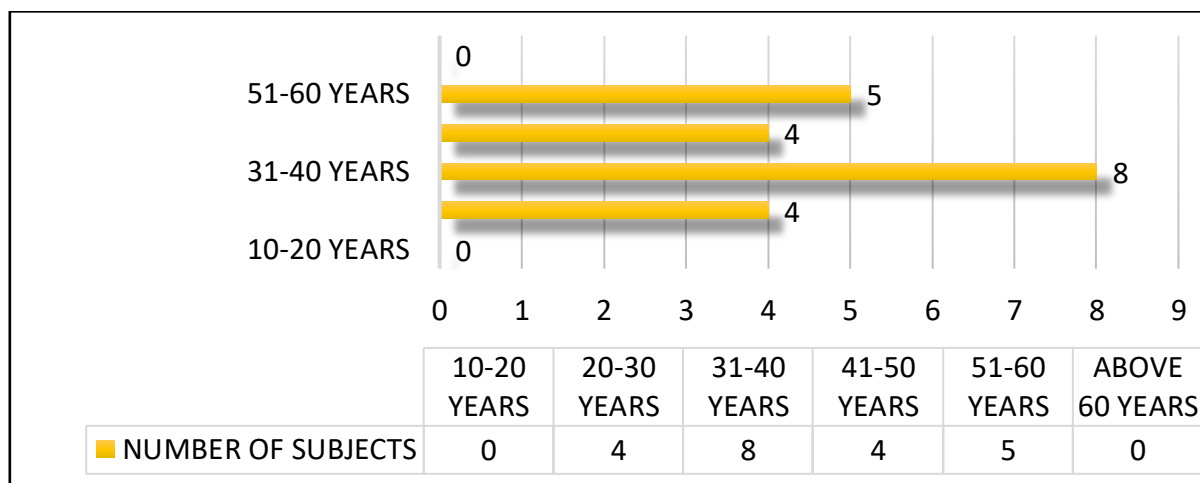


FIGURE 3.11

➤ *Discussion:*

It was observed to occupy highest diagnosed disorder among all psychiatric illness. The above study is regarding schizophrenia disorder based on their age, in the sample size where (n=101). There are no prominent cases in age groups below 20 years and above 60 years. Total 8 subjects are affected in age groups 20-30 years and 41-50 years. The rest 8 and 5 people fall under 31-40 years and 51-60 years.

L. *Distribution of subjects according to depression disorder based on their age (n=17)*

TABLE 3.12 Distribution of subjects according to depression disorder based on their age (n=17)

AGE	SUBJECTS	PERCENTAGE
20-30	3	18
31-40	6	35
41-50	5	29
51-60	2	12
ABOVE 60	1	6

TABLE 3.12

FIGURE 3.12 Distribution of subjects according to depression disorder based on their age (n=17)

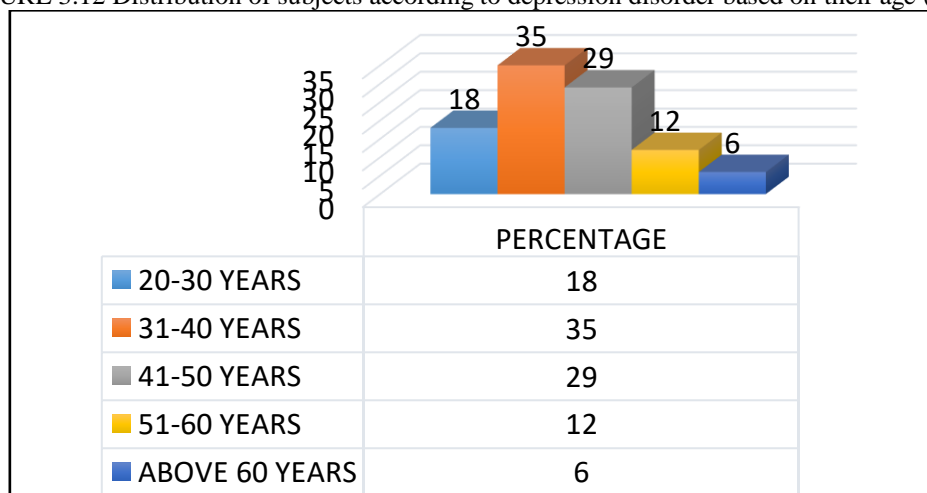


FIGURE 3.12

➤ *Discussion:*

This study is done regarding the depression disorder, which second commonly seen disorder based on the age of subjects, where total number includes (n=101). Here depression is seen most commonly in 35% of patients who falls under 31-40 years of age, 29% in 41-50 years of age, 18% in 20-30 years of age, 12% in 51-60 years and 6% in above 60 years of age group. Depression is not prominent in people with age groups below 20 years.

IV. CONCLUSION

In the present study, Traditional drugs (TCA's, Atypical and typical antipsychotics) were prescribed more in comparison to Novel antidepressants (SSRIs and SNRIs). Most commonly used Antipsychotics were **lorazepam**, **haloperidol** and **escitalopram**.

Psychotropic drugs (30.5%) and supportive drugs (69.5%) were used for entity of treatment according to indication. Although polypharmacy was observed, in relevant to subject's comorbid conditions, severe disease illness, adjuvant therapy and to prevent concurrent adverse reactions associated with drugs it is justifiable.

Percentage of generic drug prescribing is low, where the challenges on frequent use of brand names to be addressed. Though the prescribed percentage of drugs from EDL (Essential Drug List) was high, drug specificity with the disorder was low, which has to be improved.

Schizophrenia and **Depression** were the most commonly seen psychiatric disorders. Especially in developing countries mental health care remains a neglected issue, which has to be taken care off. Spreading awareness on mental condition might be one of the examples

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