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DRUG UTILISATION PATTERN OF PSYCHOTROPIC DRUGS IN PSYCHIATRIC OUTPATIENT DEPARTMENT OF RURAL TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT: Background: Psychiatric disorders are one of the major causes of morbidity. Development of newer drugs like selective serotonin reuptake inhibitors and atypical antipsychotics has altered the treatment paradigms. **Objective**: To study drug utilization pattern of psychotropic drugs in psychiatric outpatient department. Material and **Methods:** After ethical approval six month observational, prospective study was conducted at tertiary care hospital, South India. Prescriptions containing at least one psychotropic drugs were included. Data was measured for number and percentage of prescriptions or drugs and using selected World Health Organization (WHO) drug use indicators. Microsoft excel was used to summarize and graph pad instat was used for analysis of data as appropriate.($P < 0.05$). **Results:** 101 prescription contained 187drugs (1.851±0.8 per prescription) where 67.33% of prescriptions had more than 2 psychotropic drugs introducing psychiatric polypharmacy. Selected WHO drug use indicators showed some potential problems in prescriptions which can be improved. Antidepressants (41.49%) were prescribed more followed by sedative/hypnotics (34.69%), antipsychotics (16.3%) and antimaniac drugs (7.4%). Among antidepressants, Sertraline was highly prescribed followed by Amitriptyline, Escitalopram and Mirtazepine. Clonazepam was frequently prescribed sedative/hypnotic. All antipsychotics were newer generation adjuncted with central anticholinergics; Risperidone being first choice. For mania, Valproic acid was frequently used. Among these drugs; frequently Clonazepam (24.48%) and infrequently Quetiapine (1.36%) were used. **Conclusion:** The trend of prescribing in psychiatry is shifted to newer drugs like selective serotonin reuptake inhibitors and atypical antipsychotics. There is evidence of practice of psychiatric polypharmacy. Results of WHO drug use indicators also showed need to improve prescribing habits to ensure rational use.

INTRODUCTION: Practice of medicine is expected to be primarily based on evidence provided by pre marketing clinical trials, but further data from post marketing evidence are needed to provide an adequate basis for improving drug therapy.[1]

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So it is important to perform the pharmacoepidemiological study like Drug utilisation study over time. The World Health Organization (WHO) defines drug utilisation study as the marketing, distribution, prescription and use of drugs in a society, considering it's consequences, either medical, social and economic.[2]

Psychiatric disorders are one of the major causes of morbidity and form an important public health priority.[3, 4] It is also found that prescriptions for drugs used for mental disorders is increasing in

different parts of the world.[5] To treat these psychiatric disorders, a wide array of psychotropic drugs are available.[6] Psychiatrists are also continuously exposed to newly introduced drugs that are claimed to be safe and more efficacious.[7] The choice between these different drugs are being based on therapeutic effectiveness, adverse drug reactions, socio-demographic characteristics of treated patients and the prescription setting (hospital, community, private or public).[6] Introduction of newer drugs like selective serotonin reuptake inhibitors (SSRIs) and atypical anti psychiatric during the past two decades, may have changed the drug prescribing habits in psychiatry.[8] Thus drug utilisation study has to be conducted to see how prescribing pattern of drugs utilised in psychotic illness is changing and is also possible to identify huge differences between clinical trials and actual practice. [9] We expect that post marketing drug use data will furnish the evidence for rational practice.

There is lot of potential drug use problem evident in psychiatric prescription. For example high incidences of polypharmacy which is becoming a debatable practice now in clinical psychiatry which is based more upon experience than evidence.[11] Psychiatric polyphrmacy can be defined as the use of two or more psychiatric medications in the same patient,[11] or using two or more medications (of the same chemical class or same pharmacologic actions) to treat the same condition.[12] Error in prescription writing is still another issue. Worldwide, more than half of all medicines are prescribed, dispensed, or sold improperly and about one third of the world's population lacks access to essential medicines.[12]

Evaluating the prescription based on WHO indicators is helpful to identify problems in drug use. In developing countries this method is popularly being used to measure the rational use of drug (Rational drug use refers to the prescription of the right drug for the right indication in the right dosage and dosing frequency for the correct duration. [13]) and in correcting deviations from expected standards and in planning.[14] These are a set of validated standardized indices used to measure drug use in healthcare facilities. Drug use indicators include core drug use indic ators and complementary drug use indicators. Core drug use indicator include prescribing indicator, patient care indicators and facility indicators. Prescribing indicator include average number of drugs per patient encounter, percentage of patient encounters with essential drugs , percentage of patient encounters with injection etc .Patient care indicator include average consultation time, average dispensing time, percentage of drug actually dispensed etc. Facility indicators include availability of copy of essential drug list or formulary, availability of key drugs. Complementary drug use indicators represent measure of performance that can be used in addition to core indicators depending on local circumstances.[15]

Since no such study was carried before in our psychiatric OPD, we conducted drug utilisation study of psychotropic drugs with following objectives.

1. To study the diagnosis and demographics of patient.
2. To assess the psychotropic prescriptions using selected WHO drug use indicators.
3. To record the completness of documentation for dug information (dose, frequency, duration or quantity and instruction if any) , patient information (name, age, sex, diagnosis) and prescriber signature in psychiatric prescription.
4. To assess the extent and nature of drug use.
5. To assess the prevalence of psychiatric polypharmacy

MATERIALS AND METHODS:

Study design:

Prospective, Observational study.

Source of data and materials:

Patient prescriptions, patient case sheets, data collection form collection form.

Inclusion Criteria:
Adults of either sex suffering from psychiatric illness comming to psychiatric outpatient department, patient of age above 18 years and patients who have at least one psychotropic medication in prescription.

Exclusion Criteria:
Pregnant and lactating women, patients of epilepsy, parkinsonism and substance use related disorder as well as those cases where diagnoses will be not certain

Study population**:**
101 patients

Study period:
6 months (October 2014 to April 2015)

Study site:
Psychiatric outpatient department at Adichunchanagiri Hospital and Research Centre. (1050 bed teaching hospital)

Ethical clearance: Ethically approved from the Institution's Ethical Committe of Adichunchanagiri Hospital and Research Centre.

Study procedure:
Method of collection of data:
Data of patie nts meeting above inclusion and exclusion criteria during study period was collected in costumised data collection form after ethical clearance committe approval of AIMS hospital and research centre. Following data was collected for analysis.a)Patient demographic details like : Patient diagnosis, Age, Sex, Empl oyment status , Marital status b) Prescription details like date, outpatient number, number of drugs in prescription, name of individual drug, its dosage, dosing schedule or frequency, and duration of therapy, number of drugs prescribed by generic name, Number of prescribed drugs which are available in hospital drug store

Data analysis:
Data analysis was done on following basis.

Assesment of prescribing pattern as per selected WHO drug use indicator which includes
Average number of drugs per encounter = (total number of drugs prescribed) ÷ (total number of encounters surveyed).

1. Percentage of drugs prescribed by generic name = (number of drugs prescribed by generic name) ÷ (total number of drugs prescribed) x 100.

2. Percentage of injection drugs prescribed = (number of injection drugs prescribed) ÷ (total number of drugs prescribed) x 100.

3. Percentage of antibiotic prescribed = (number of antibiotics prescribed) ÷ (total number of drugs prescribed) x 100

4. Percentage of drugs prescribed from WHO Essential drug list 2015 = (number of drugs prescribed from essential drug list) ÷ (total number of prescribed drugs) x 100

5. Percentage of drugs prescribed from National Formulary of India 2015= (number of drugs prescribed from National formulary) ÷ (total number of prescribed drugs) x 100

6. Percentage of psychotropics =(total number of psychotropic drugs prescribed) ÷(total number of prescribed drugs) x 100

7. Percentage of FDC prescribed=(total number of Fixed drug combination prescribed) ÷(total number of prescribed drugs) x 100

8. Percentage of prescribed drugs available in hospital store = (number of prescribed drugs available in hospital drug store) ÷ (total number of drugs prescribed) x 100

9. Percentage of prescription with complete documentation error: (Number of prescription without having complete documentation) ÷ (Total number of prescription)

Assessment of diagnosis of patient was done with patient's demographics like age, sex, Employment status, marital status. Assessmnt of pattern and nature of drug use was done on following basis of classification of drugs followed here was as follows:

1. Antipsychotics
2. Antidepressants
3. Sedative and hypnotics
4. Mood stabilisers
5. Others (Nonpsychiatric drugs).

Assessment of polypharmacy was done on following basis of classification of polypharmacy [12]

1. Same class polypharmacy
2. Multi polypharmacy
3. Adjunctive polypharmacy
4. Augmentation polypharmacy

Statistical analysis:
The data was summarised using microsoft excel and analysed using statistics such as mean, median,frequency (N), percentage (%), standard deviation (SD), range (R), interquartile range (IQR) and chi square test as appropriate using Microsoft excel and Graph Pad In Stat statistical software.

RESULTS AND DISCUSSION:

Patient diagnosis:
We reviewed 101 patient prescriptions where most frequent diagnosis were mood disorder (52.47%) followed by anxiety(15.84%) and psychosis. (11.88%). Other diagnsosis which were infrequent include somatoform disorder(2.9%), migraine (2.9%), premature ejaculation disorder(0.9%), dissociative disorder (2.9%), delusional disorder (2.9%) and insomnia(6.9%). Among different mood disorders major depression were most frequent (10.8%). Thakar et al and Moree et al also seen mood disorder is dominant among different psychiatric disorder. [8,16] However Monalisha et al seen schizophrenia as a most common diagnosis.[17] This shows that diagnosis pattern will vary depend on settings to settings.

Age and sex distribution:
The age and sex distribution of patient was as sumarrised in **Table 1**. We seen that most of psychiatric disorders (60.39%) fall within age group of 18-40 with most significant result for mood disorder (83.13%). This is in close agreement with other studies where majority of population is within 18-50 age group and these disorders appears at early stage of their life.[18] Overall, male (51.48%) were more than female(48.51%). This finding is similar to the study which showed that 58.76% of the cases involved males followed by 41.24% female.[19] Stratification of psychiatric disorder for sex showed that in mood and psychosis disorder females were more dominant which is similar to a study conducted by Thakar et al. [8] But in contrast to our study Juno J. Joel found that in psychosis male population were more than females.[20]

TABLE 1: AGE AND SEX DISTRIBUTION OF PATIENT

Types of Disorder	Age Distribution (N)%			Sex distribution (N)%		
	18-40	>41	P value	Male	Female	P value
Mood disorder (N=53) 52.47%	(43) 81.13%	(20) 18.8%	0.005	(26) 49.0%	(27) 50.95%	0.87
Anxiety disorder (N=16)15.84%	(8) 50%	(8) 50%	1	(10) 62.5%	(6) 37.5%	0.30
Psychosis (N=12) 11.88%	(8) 66.66%	(4) 33.3%	1.41	(5) 41.66%	(7) 58.3%	0.55
Others (N=20) 19.8%	(12) 60%	(8) 40%	0.34	(11) 55%	(9) 45%	0.63
Total (N=101)	(61) 60.39%	(40) 39.5%		(52) 51.4%	(49) 48.6%	

P value < 0.05, statistically significant

Note: P value < 0.05, statistically significant, This table showed that mood disorder (52.47%) was the most frequent diagnosis where females(50.95%) and age group within 18-40 years(81.13%) were more prevalent which was followed by anxiety(15.84%) and psychosis disorder (11.88%). Overall we observed male (51.4%) were frequently visiting psychiatric OPD than females and also the patient within age group of 18-40 years.

Employment and marital status:

The employment and marital status of patient was as shown in **Table 2**. Most of the patient were not employed.This finding is similar to study conducted by Banarjee et al who seen that majority of patient population were not employed [19] Stratification of psychiatric disorders for employing status showed that only in anxiety disorder patient were employed. These finding shows that cost of therapy to these type of patient population has to be considered during prescribing. Most of the patient were married at a statistically significant rates in all type of disorder except for psychosis where married and not married patient were equal.This finding is different from study conducted by Moore et al where he found most of the patients were single (38.6%) followed by married (36.4%) and widow (9.8%).[18]

TABLE 2: EMPLOYMENT AND MARITAL DISTRIBUTION OF PATIENT

Types of disorder	Employment status (N)%			Marital Status (N)%		
	Employed	Not employed	P value	Married	Single	P value
Mood disorder (N=53) 52.47%	(26)49.05%	(27)50.94%	0.87	(43)81.11%	(10)18.86%	0.0001
Anxiety disorder (N=16)15.84%	(10)62.5%	(6)37.5%	0.29	(15)93.75%	(1)6.25%	0.0003
Psychosis (N=12) 11.88%	(4)33.34%	(8)66.66%	0.23	(6)50%	(6)50%	1
Others (N=20) 19.8%	(10)50%	(10)50%	1	(18)90%	(2)10%	0.0002
Total (N=101)	(50)49.5%	(51)50.49%		(82)81.18%	(19)18.81%	

Note: P value < 0.05, statistically significant, this table showed stratification of patient on marital and employment basis. Most patient (81.18%) got psychiatric disorder after marriage than in single (18.81%) where employed and not employed status was similar. In case of mood disorder which accounted for frequent diagnosis 81.11% were married. For all disorder we observed no difference in employment status except psychosis where in psychosis unemployed population were more. Statistical significant results came for marrital status of anxiety and mood disorder.

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Selected drug use indicators:

The average number of drugs per prescription was lower (1.85±0.8) than that found in other studies, where it ranged from 2.3 to 3 drugs per prescription in different place of India. [16, 21, 22] However in Bangladesh much lower values of 1.3 had been reported.[23] We also seen that majority of prescriptions contain more than two psychiatric drugs introducing different psychiatric polypharmacy. In our setting very less number of drugs (12.3%) were prescribed by generic names. Similar findings of low figures had been reported in different countries like Nigeria, [22, 23] Ghana,[24] Lebanon and Nepal.[25] Still a much lower value of 4.4% has been reported at United Arab Emirates, [25] In a contrast manner very high values of 75.0% and

99.8% of generic prescribing have also been reported at Bangladesh and Cambodia respectively.[26] It is a known fact that substitution by generic drugs helps in decreasing the overall cost of therapy and is hence recommended. But there have been concerns in the case of narrow therapeutic index drugs.[27, 28] As per Thaker *et al.* generic substitution can be beneficial, provided adequate quality control is assured. [8] It was also seen that only 96.25% of brand drugs were available which is more than a similar study conducted by Gosh et al in eastern India where he found only 90.83% of prescribed drugs were available. [29]

Some out of stock drug include Quetiapine Mirtazepine etc. This shows that hospital reqiures own formulary list of drugs. In our study, on injection was prescribed. Concerns about the adverse effects and cost-effectiveness of parenteral routes of drug administration are probably the reason for the low utilization of depot injection formulation in the psychiatry OPD. Similary no antibiotics were prescribed. Pecentage of fixed dose combination (FDC) prescribed was 9.09%. We had seen that Clonazepam plus Escitalopram account for highest FDC utilised . It is well known fact that fixed dose combination introduce polypharmacy, have high cost and quality concerns of products but in other hand it will increase patient compliance which will be relevant in case of psychiatric patient if used appropriately. Utilization of drugs from the essential medicines list (Indian 2011 & WHO2013) was 28.87% and 27.8% respectively. This result is very close i.e. 30.08% with the study conducted by Juno et al. [30] but is higher than the value (16%) from the studies by Guvon et al.[31] Avaibility of copy of essential drug list or formulary is not present. The primary purpose of National list of essential medicine (NLEM) is to promote rational use of medicines considering the three important aspects i.e. cost, safety and efficacy. [32] Average psychiatric consultations time was 18±3 minutes where all patients get at least one drug . Almost all patient will come back to seek counselling advice about how to take the medicine with doctors. Sometime patient has to wait outside.

We had used some problem based complementary indicators to assess drug use in prescription. We had seen different types of error in prescription writing as per **Table 3**.We had not documented the outcomes of this error but these were the potential errors that could cause harm and can be prevented [1]. We had also seen that average cost per day of prescription was 8.58±7.42 and average cost of prescription was Rs151.36± 184.62 which complements the high cost associated with drugs used in psychiatry. 30.13% of the se prescription was always having cost more than Rs 100 (range:Rs 800.4, mode Rs.967.47). No such cost data in psychiatry is available to compare this results here in India. These drugs had to be taken for longer duration. So these patient had to spend high cost.

TABLE 3: PRECRIPTION ANALYSIS WITH SELECTED WHO DRUG USE INDICATORS

Indicators	Values
Drug use in psychiatry	
Total number of prescriptions	101
Total number of drugs	187
Average number of drugs per encounter	1.851±0.80
Total number of psychotropic drugs	147
Total number of nonpsychiatric drugs	40
Percentage of psychotropics used	78.6%
Percentage of fixed dose combination prescribed	9.09%
Selected Core drug use indicators	
Percentage of drugs prescribed by generic name	12.29%
Percentage of encounters with an antibiotic prescribed	0%
Percentage of encounters with an injection prescribed	0%
Percentage of drugs prescribed from WHO essential medicines list 2015	28.87%
Percentage of drugs prescribed from National formulaly of India 2015	27.80%
Average consultation time for illness	18±3 minutes
Percentage of patients treated without drugs	0%
Percentage of prescribed drugs available in hospital	96.25%
Problem based Complementary indicators	
Prescription writing error	
Percentage of dose strength not written	6.9%

Percentage of dose schedule not written	0.9%
Percentage of quantity/duration not written	16.83%
Percentage of instruction not written	100%
Percentage of prescription with patient information error	
Percentage of patient name not written	0.9%
Percentage of age not written	0.9%
Percentage of diagnosis not written	100%
Percentage of gender not written	100%
Percentage of prescription without prescriber signature	0%
Cost indicator	
Average cost per day	Mean ±SD Rs 8.58±7.42
Average cost of psychiatric prescription	Mean ±SD Rs151.36± 184.62, Median ±IQR Rs109.11±118.55, Mode:Rs 967.47, Range Rs 800.4
Percentage of prescriptions containing more than 100 rupees	30.13%
Percentage of prescriptions containing less than 100 rupees	69.87%

Note: This table showed the results of selected WHO drug use indicators and problem based complementary indicators like prescription writing error and associated cost indicators of prescriptions.

Assessment of prescription pattern for extent and nature of drug use:

Extent of drug use:

15 different types of psychotropic drugs (total: 147) were used as shown in **Fig. 1.** On the basis of therapeutic category antidepressants (41.49%) were prescribed more followed by sedative/hypnotics (34.69%), antipsychotics (16.3%) and antimaniac drugs (7.4%). Antidepressants and sedative/ hypnotics account 76.19 % of these drugs utilisaion. Among these drugs most frequently used was Clonazepam (24.48%) whereas most infrequently Quetiapine (1.36%) was used. Only four drugs viz Clonazepam, Sertraline, Risperidone and Amitriptyline accounts for 62.5% of psychotropic drugs prescribed whereas drugs like Divalproex, Escitalopram, Zolpidem, Lithium, Quetipine accounted for only 9.5% of psychotropic drug prescribed.

It is well known fact that Clonazepam use has to be highly monitored for outdoor patients because it is a drug of abuse. Sodium Valproate and Lithium like narrow therapeutic drugs were also used without therapeutic drug monitoring but we didn't see the outcomes to these patients. Most of the prescriptions (above 75%) contained therapeutic class of antidepressants and sedative/hypnotics. It was due to the fact that mood disorder followed by anxiety was the most common diagnosis which was encountered. Unlike our study, Anantha et al found antianxiety drugs to be utilized more followed by antipsychotics, mood stabilizers and then antidepressants**.** [33]

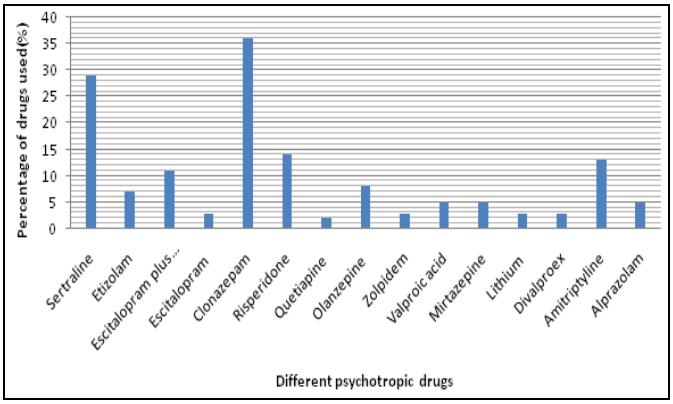

FIG. 1: EXTENT OF DRUG USE

Note: This table showed that Clonazepam was frequently used drug followed by Sertraline, Risperidone, Amitriptyline, Escitalopram plus Clonazepam etc as shown in figure. Quetiapine was leastly utilized drug.

Nature of drug use:

The nature of drug utilized based on diagnosis was shown in **Table 4.**

Drugs used in mood disorder:

In mood disorder selective serotonin reuptake inhibitors (SSRI) were prescribed more than tricyclic antidepressant and tetracyclics. This is acccordance to the current recommendations (APA and NICE) in the management of mood disorders. [34, 35] Currently, SSRIs are greatly preferred over the other classes of antidepressants. The adverse-effect profile of SSRIs is less prominent than that of some other agents, which promotes better compliance.[36, 37] Mirtazepine was only used tetracyclic antidepressant in our study occasionally for major depression. Sertraline and Escitalopram, were the only SSRI used whereas amitriptyline was the only tricyclic antidepressant used.

We had also seen that mostly benzodiazepines namely Clonazepam and Alprazolam were co-prescribed with all these antidepressants as augmentation strategy. Among the drugs used in bipolar mood disorder Olanzipine was most commonly prescribed followed by Valproate, Risperidone, Divalproex, Lithium, Quetiapine. According to the NICE guidelines 2006, [38] for the management of bipolar disorder; Lithium, Olanzapine or Valproate can be considered for long-term treatment. If the patient has frequent relapses, or symptoms that continued to cause functional impairment, switching to an alternative monotherapy or adding a second prophylactic agent (Lithium or Olanzapine or Valproate) should be considered.

If a trial of a combination of prophylactic agents proves ineffective, Lamotrigine or Carbamazepine can be tried. **'**Valproic Acid and Olanzapine', 'Risperidone and Lithium', ' Lithium and Quetiapine and Divalproex' were some of the multiclass products prescribed as add on therapy as needed in our study which had increased the cost of therapy. Lithium was used only in 1.6% patients of bipolar disorder which is similar to the study conducted by Thakar etal who found 1.3% of cases of Lithium treated groups.[8] Kessing et al found that, in general, Lithium was superior to valproate. [39] But because of the low therapeutic index for Lithium, periodic determination of serum concentrations is crucial.[40] The concern about its narrow therapeutic index and difficulty in obtaining drug levels of Lithium, explains the low use of Lithium in our center. Many drug utilization studies have also reported a similar finding. [41, 42] In contrast to this, in a study conducted by Piparva et al in Gujarat in 2011, it was found that Lithium was used extensively, in about 73% of patients diagnosed with bipolar disorders.[16] Monoamine Oxidase Inhibitors (MAOI) were not prescribed to anyone in our study.

The reasons being risk of hypertensive crisis, interactions with other drugs and dietary restrictions for patients on MAOIs.[43] We did not found prescription for drugs like Desvenlafexine, Paroxetine, Dothepine, Fluoxetine, Duloxetine, Venlaflaxine unlike Monalisha Jena et al where they found all these drugs were being utilised.[44]

Drugs used in anxiety disorder:

Clonazepam was the most commonly prescribed drug for anxiety disorders, followed by Escitalopram plus Clonazepam combination , Sertraline, Etizolam and Escitalopram. The 2011 NICE guidelines for the management of anxiety disorders state that SSRIs or Serotonin Norepinephrine reuptake inhibitors (SNRIs) should be offered to the patient first. Benzodiazepines should be avoided and used only for short term in case of crisis [45, 46]

Benzodiazepines can be reasonably used as an adjunct in the initial stage while SSRIs are titrated to an effective dose, and they can then be tapered over 4-12 weeks while the SSRI is continued.[47] Alprazolam was not prescribed to any patient suffering from anxiety disorder or otherwise and rightly so because of its higher dependence potential. Alprazolam has a short half-life, which makes it particularly prone to rebound anxiety and psychological dependence. [48, 42] Clonazepam has become a favored replacement because it has a longer half-life and empirically elicits fewer withdrawal reactions upon discontinuation. From this data it is evident that whatever data signifies the prescription pattern can also depend on the availability of drugs in that particular hospital setting or dispensary and also will be dependent on the locality which may also be one of the factors that will influence the prescribing patterns.

TABLE 4: NATURE OF DRUG USE

Name of drug	Anxiety disorder	Mood disorder	Psychosis Disorder	Other Disorder	Total Drugs	% used
Sertraline	4	20	1	4	29	19.72%
Etizolam	4	0	0	3	7	4.76%
Escitalopram plus Clonazepam	7	4	0	0	11	7.48%
Escitalopram	1	2	0	0	3	2.04%
Clonazepam	11	17	0	8	36	24.48%
Risperidone	0	4	8	2	14	9.52%
Quetiapine	0	1	1	0	2	1.36%
Olanzapine	0	5	2	1	8	5.44%
Zolpidem	0	2	0	1	3	2.04%
Valproic acid	0	5	0	0	5	3.40%
Mirtazepine	0	5	0	0	5	3.40%
Lithium	0	3	0	0	3	2.04%
Divalproex	0	3	0	0	3	2.04%
Amitriptyline	0	11	0	2	13	8.84%
Alprazolam	0	4	0	1	5	3.40%
Other	0	21	8	11	40	
Total	27	107	20	33	187	

Note: This table showed the exposure of drugs to different types of psychiatric illness. At most, setraline were given for all disorder and other results were as shown

Drugs used in psychosis disorder:

Almost all prescribed antipsychotic drugs were second generation anti–psychotics; mostly

Risperidone followed by Olanzapine and Quetiapine. Pem Chuki et al also found the same pattern of prescribing of atypical antipsychotics in Pune, India with very less clozapine prescriptions [49] Although evidence base is very small, Olanzapine, had been showing more adverse effect than Risperidne in some studies from India. Selecting Risperidone as a first choice is right decision.[50, 51] In our study we had also seen that atypical drugs were not prescribed. In another parts of India typical drugs like Haloperidol, Amisulpride, Trifluperazine, Boronserin, Thioridazon, Loxapine, Chlorpromazine were also being prescribed along with atypicals as a first choice.[52]

For some years, it was believed that the newer generation drugs were more effective, but that belief is now fading. In addition, the high cost of the newer generation antipsychotics is a matter of concern.

There have been some important studies which brought to light the finding that 1st generation drugs are as useful as the 2nd generation drugs, with the exception of Clozapine which outperforms all.[53, 54] Clozapine may be offered only after primary failure of two antipsychotic drugs. Various studies have seen that the second generation antipsychotics were having fewer adverse effects.[54] This may be reason of use of second generation antipsychotics than first generation in our study.

Prevalence of psychiatric polypharmacy:

The increased number of drugs taken has a direct relationship with the number of incidence of new hospital admissions per year due to adverse drug reactions, inappropriate medication use, and mortality.[56, 57] Keeping these things in mind, we had identified different types of psychiatric polypharmacy where s ame c lass p olypharmacy refers to the use of more than one medication from the same medication class. Multi-class polypharmacy refers the use of full doses of more than one medication from different medication classes for the same symptom cluster. Augmentation polypharmacy refers to the use of a medication at a lower than normal dose along with another medication from a different class at its full therapeutic dose for treating the same symptom cluster. Augmentation also refers to the addition of a medication that would not be used alone for the same symptom cluster. Adjunctive polypharmacy refers to the use of one medication to treat the side effects or secondary symptoms of another medication from a different medication class.[12]

We had seen 61.39% of prescription s with psychiatric polypharmacy. In a similar manner study by Ahmed Tabish and their collegue in India found 71% of the prescriptions were having polypharmacy where majority of patients were prescribed psychotropic drugs from 5 different categories or different compounds from same category.[58]

This value is within the range *of* 13%-90%.*;* a review done by Kukreja *et al*.[59] This shows that in India pyshiatric polypharmacy is common.We had seen that augumentation polypharmacy was mostly common followed by adjunctive, same class and multiclass polypharmacy. Adeponle et al and De las Cuevas et al seen different results than this where they had found that multiclass polypharmacy were mostly prevalent. [60, 61] However nature of drugs within classes of polypharmacy were almost same in our study. If we talk about augmentation polypharmacy ' Clonazepam plus Sertraline' was most common example.

All the augmentation strategy was used for depression disorder. In multiclass polypharmacy 'Valproic acid plus Olanzapine' was mostly common and was used for mania. In case of same class polypharmacy ' Clonazepam and Clonazepam+Escitalopram as FDC' was mostly prescribed for anxiety disorder. Likewise in case of adjunctive polypharmacy category Risperidone plus Trihexiphenidyl and Olanzepine was mostly used.

Prescriber's explanation for this type of practice is sometime to prevent occurrence of adverse drug reaction e.g. extra pyramidal effect ;to tackle the negative side effects of psychosis etc but the efficacy and safety of such co-prescription has been insufficiently investigated. So such practice is wrong as it is increasing burden on patient in the form of money as well as number of drugs. While evidence for the added benefit of psychiatric polypharmacy is limited, there is growing evidence regarding the increased adverse effects associated with such combinations.[61]

TABLE 5: PREVALENCE OF PSYCHIATRIC POLYPHARMACY

Type of Psychiatric Polypharmacy	Number of prescription	Percentage (%)
Augmentation polypharmacy	29	28.71%
Clonazepam + Sertraline	14	13.86%
Clonazepam Plus Escitalopram as FDC	10	9.90%
Escitalopram + Clonazepam	1	0.99%
Amitriptyline + Alprazolam	1	0.99%
Mirtazepine + Clonazepam	1	0.99%
Amitriptyline + Clonazepam	2	1.98%
Same class polypharmacy	10	9.90%
Clonazepam + Alprazolam	1	0.99%
Clonazepam Plus Escitalopram as FDC + Clonazepam	7	6.93%
Clonazepam Plus Escitalopram as FDC + Mirtazepine	1	0.99%
Sertraline + Amitriptyline	1	0.99%
Muticlass polypharmacy	8	7.92%
Valproic Acid + Olanzapine	4	3.96%
Olanzapine + Mirtazepine	1	0.99%
Risperidone + Lithium	1	0.99%
Olanzapine + Amitriptyline	1	0.99%
Lithium + Queitipine + Divalproex	1	0.99%
Adjunctive polypharmacy	15	14.85%
Risperidone + Trihexiphenidyl	12	11.88%
Olanzapine + Trihexiphenidyl	3	2.97%
Psychiatric monotherapy	39	38.61%
Total	101	100%

Note: This table showed the prevalence of polypharmacy where augmention polypharmacy (28.71%) was mostly common followed by adjunctive polypharmacy (14.85%), same class polypharmacy (9.9%) and multiclass polypharmacy(7.92%).

CONCLUSION: This study was necessary to reveal the prescription pattern of psychotropic

drugs as part of drug utilization research in mental health, often neglected in this part of the world. It provides opportunities for enhancing the quality of mental healthcare in our environment, through awareness creation for rational and cost-effective use of psychotropic medicines. Based on the results following points were concluded.

- The most common prescriptions were antidepressants, followed by benzodiazepines (sedative/hypnotics) and antipsychotics. Mood stabilisers were prescribed in less patients.

- According to the prescribing pattern of antidepressants; newer SSRI agents were mostly used and in antipsychotics, only atypical antipsychotics were used.Trend of using Sertraline as compared to other drugs and Risperidone as compared to other atypical antipsychotic shows that shifting of treatment regimens for schizophrenia and mood disorder also in rural part of India.

- Most of the patients in the study were poor patients, therefore could not afford the newer drugs, which have become the preferred options in developed countries indicating the need for measures to reduce cost of newer psychotropic drugs that there is a need of hospital formulary and incorporating more drugs as per the formulary committee recommendations.

- Selected WHO drug use indicators showed some potential problems in prescriptions which can be improved.

- Prescription of drugs in their generic names leads to patient compliance and less financial burden contrary to the use of brand names. In our study about 12% of drugs were prescribed with generic drug and mostly for unemployed and females which will be good reference for other settings.

- The present study showed that in anxiety disorder mostly Clonazepam was used followed by Clonazepam plus Escitalopram or Clonazepam plus Sertraline combination.

- The present study also revealed the use of different poly pharmacy strategy in treating psychiatric patients; therefore there is a need to watch out for drug interaction indices.

- E-prescribing promises to be useful innovation to reduce technical error in prescription writing and can be utilised in our settings.

- Lithium and Valproate like drugs were also prescribed which requires clinical pharmacokinetic monitoring and dosage adjustment to reduce toxicity.

LIMITATION: Short period (6 month), less sample size (may be because of less prevalence of disorders),

CONFLICT OF INTEREST: There is no any conflict of interest as such.

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