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Research Article

A study on drug prescribing pattern in psychiatry out-patient department from a tertiary care teaching hospital

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ABSTRACT

Background: The burden of illness resulting from psychiatric and behavioral disorders is enormous; although, it remains grossly under represented by conventional public health statistics, which focus on mortality rather than the morbidity or dysfunction. Therefore, the study was carried out to find out morbidity pattern of psychiatric diseases and prescribing trends of psychotropic drugs.
Methods: A prospective observational study was conducted in psychiatry out-patient department of a tertiary care hospital for 3 months. Diagnosis was made according to ICD-10 criteria. Prescription pattern was analyzed using World Health Organization (WHO) drug indicators.
Results: Of 520 patients analyzed, 52.31% were males and 47.69% were females, 72.31% were <45 years. Depression 42.88%, schizophrenia 23.08%, bipolar mood disorders 17.88%, and anxiety 9.04% accounted for 92.88% of cases. Among the total of 1092 psychotropic drugs prescribed, 1056 (96.7%) were oral formulations. Average number of psychotropic drugs per prescription was 2.1 ± 0.8. 20.58% of the prescriptions contained fixed dose combinations. About 28.75% drugs were prescribed by generic name. Utilization from the WHO and National essential medical list were 28.57% and 38.64%, respectively. The prescribing frequency of anxiolytics, anti-depressants, anti-psychotics, anti-cholinergics, and anti-mania drugs was 30.04% (328/1092), 25.46% (278/1092), 25.37% (277/1092), 11.54% (126/1092), and 7.6% (83/1092), respectively. Clonazepam, olanzapine, escitalopram, carbamazepine and trihexyphenidyl were the most commonly prescribed benzodiazepines (BZD), antipsychotic, antidepressants, mood stabilizer and anti-cholinergics, respectively.
Conclusion: Utilization pattern of the psychotropic drugs were in accordance to the recommendations of various treatment guidelines. BZD were the most commonly prescribed psychotropic drugs.

Keywords: Drug utilization, Psychotropic, Out-patient

INTRODUCTION

Drug prescribing pattern varies distantly among different geographical areas and is influenced by patient characteristics, type of disease prevalent, cultural and environmental influences, socioeconomic status, availability of newer drugs and prescribing habit of physicians. Drug utilization studies seeks to monitor, evaluate and if necessary, suggest modifications in prescribing patterns so as to make medical care rational and cost-effective.[1] It is important to realize that inappropriate use of drugs represent a potential hazard to patients and an unnecessary expense. This necessitates a periodic review of pattern of drug utilization to ensure safe and effective treatment.[2] To improve the overall drug use, especially in developing countries, international agencies like World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) have recommended standard drug use indicators,[3,4] which help us to know the shortcomings in our prescription writing.

Psychiatric disorders form an important public health priority.[5,6] The expanding and challenging field of psychopharmacology is constantly seeking new and improved drugs to treat psychiatric disorders.[7] In this way, psychiatrists are continuously exposed to newly introduced

drugs that are claimed to be safe and more efficacious.[8] Newer drugs are however known to be expensive and unaffordable to the majority of patients,[9] especially in developing countries. Although psychotropic drugs have had a remarkable impact in psychiatry, their utilization in actual clinical practice, effectiveness and safety in the real-life situation needs continuous study.[10] As there is no sufficient data available on their use in the population of central India, the present study was carried out to analyze the pattern of psychotropic drug utilization in the psychiatric out-patient department (OPD).

METHODS

Study design

It was a hospital-based prospective observational study.

Study period

The study was conducted over a period of 3 months from December 1, 2013 to February 28, 2014 at the Chirayu Medical College and Hospital, Bhopal a tertiary care teaching hospital in central India.

Sampling

A total of 520 prescriptions were selected. All patients attending the psychiatry OPD during the period of the study were included and analyzed as per the WHO drug indicators.[3,4]

Inclusion criteria

Prescriptions of patients of both sex and all ages, suffering from a psychiatric illness and started on at least one psychotropic drug were selected.

Exclusion criteria

In-patients, referred patients, patients of epilepsy, patients who were pregnant, lactating as well as those cases where diagnosis was not certain were excluded from the study.

Study methodology

Diagnosis was made according to ICD-10 criteria. A pre-designed and pre-tested structured proforma was used to collect the required information. Age, sex, diagnosis (patient information) and name of the drug, dosage form, route of administration and duration of prescription (drug information) were recorded. The method of duplicate prescriptions was used for analysis.

Parameters for evaluation

WHO drug use indicators included, to analyze the prescriptions were: (1) average number of the drugs per prescription, (2) average number of the psychotropic drugs per prescription, (3) percentage of the psychotropic drugs prescribed by generic name, (4) percentage of injectable drugs prescribed, (5) percentage of prescriptions containing psychotropic fixed dose combinations (FDC), (6) percentage of the psychotropic drugs prescribed from essential drug list and (7) percentage of the psychotropic drugs prescribed from the hospital pharmacy.

Data analysis

Data were entered and analyzed using Microsoft Excel 2007.

RESULTS

Characteristics of study participants

Of the total 520 cases analyzed, 52.31% were males and 47.69% were females. Age and gender wise distribution of psychiatric cases is shown in Figure 1. The age range was 12-70 years with the average age being 35 years. Majority of the psychiatric illnesses (37.5%) were observed in the age group of 31-45 years with female preponderance.

Pattern of psychiatric disorders

According to the result of the study, the morbidity pattern of psychiatric diseases observed were depression 42.88%, schizophrenia 23.08%, bipolar mood disorders 17.88%, and anxiety 9.04%. The diseases such as childhood behavioral disorders, dementia, sleep disorders, substance abuse disorders and personality disorders were grouped as other psychiatric disorders, which accounted for the 7.12% cases. The demographic profile of morbidity pattern among different psychiatric illness is shown in Table 1.

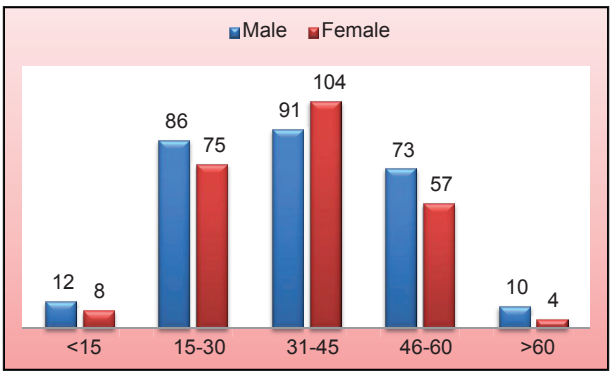

Figure 1: Age & gender wise distribution of psychiatric cases.

Table 1: Demographic profile of morbidity pattern amongst psychiatric illnesses.

Psychiatric disorders	Age (years)					Gender	
	<15	15-30	31-45	46-60	>60	M	F
Mood disorders (n=316)							
Depressive disorders (n=223)	2	65	96	58	2	103	120
Bipolar affective disorder (n=93)	3	34	31	21	4	53	40
Schizophrenia (n=120)	1	24	49	43	3	73	47
Anxiety (n=47)	3	23	14	6	1	19	28
Other psychiatric disorders (n=37)	11	15	5	2	4	24	13
Total (n=520)	20	161	195	130	14	272	248

Analysis of prescription patterns according to WHO/ INRUD drug use indicators

Table 2 summarizes findings of the analysis. A total of 520 prescriptions containing 1306 drugs were analyzed. Of these, 1092 were psychotropic drugs. The other commonly co-prescribed drugs were calcium lactate, multivitamins and iron and zinc preparations. Average number of the psychotropic drugs per prescription was 2.1 ± 0.8. Percentage of prescriptions with injectable drugs accounted for 6.92%. 28.75% of the drugs were prescribed by generic names, while the rest were branded. 28.57% of the drugs were from the WHO's 18th List of Essential Medicines[11] and 38.64% were from National List of Essential Medicines of India (NLEM), 2011.[12]

A total of 107 FDCs were used. The commonly prescribed were trihexyphenidyl hydrochloride 2 mg plus trifluoperazine 5 mg - prescribed to 46 patients, escitalopram 10 mg plus clonazepam 0.5 mg - prescribed to 39 patients and the combination of risperidone 3 mg plus trihexyphenidyl 2 mg - prescribed to 22 patients. About 84.52% psychotropic drugs were prescribed from the hospital pharmacy.

Figure 2 shows the distribution of the number of prescribed drugs per patient. The number of drugs per prescription ranged between 1 to 5 drugs. 73.46% patients received more than one drug. The number of prescriptions containing 2 drugs accounted for the highest number of prescriptions 48.46%, while those containing 1 and 3 drugs per patient were 26.54 and 21.35%, respectively. Prescriptions containing four and more than four drugs accounted for only 3.66% of the total prescriptions. Drugs were generally prescribed for time duration of 15 days.

A total of 26 psychotropic drugs were prescribed out of which 9 drugs were from the WHO's 18th essential drug list. Anxiolytics (30.04%) were the most commonly prescribed followed by antidepressants (25.46%), antipsychotics (25.37%), anticholinergics (11.54%), and mood stabilizers (7.6%) as shown in Table 3. Clonazepam, olanzapine, and escitalopram, were the most commonly prescribed benzodiazepines (BZD), antipsychotic, and antidepressants, respectively. Carbamazepine was preferred over lithium as a mood stabilizer. Among anticholinergics, trihexyphenidyl was used.

Table 2: Drug usage pattern in psychiatric illness.

Drug use indicators	Result
Average number of the drugs per prescription	2.51±0.75
Average number of the psychotropic drugs per prescription	2.1±0.8
Percentage of the psychotropic drugs prescribed by generic name	314/1092 (28.75%)
Percentage of injectable drugs prescribed	36/1092 (3.3%)
Percentage of the prescriptions containing psychotropic FDC	107/520 (20.58%)
Percentage of psychotropic drugs prescribed from essential drug list	483/1092 (44.23%)
Percentage of psychotropic drugs prescribed from hospital pharmacy	923/1092 (84.52%)

FDC: Fixed dose combinations

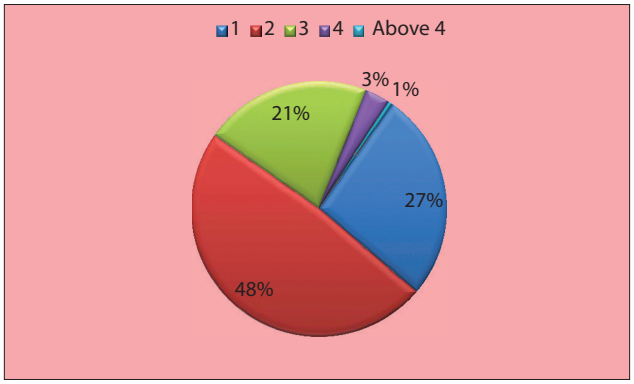

Figure 2: Distribution of number of psychotropic drugs per prescription.

DISCUSSION

The burden of illness resulting from psychiatric and behavioral disorders is enormous, although it remains grossly under represented by conventional public health statistics. Some psychotropics are among the most commonly used ones, the use of such drugs is a relevant public health

Table 3: Prescribing prevalence of individual psychotropic drugs.

Drug class	Drug	No. of drugs (n=1092)	Percentage of drugs
Anxiolytics (n=328)	Clonazepam	170	51.83
	Lorazepam	106	32.32
	Others	52	15.85
Antidepressants (n=278)	Escitalopram	109	39.21
	Amitriptyline	67	24.1
	Imipramine	46	16.55
	Others	56	20.14
Antipsychotics (n=277)	Olanzapine	125	45.13
	Haloperidol	96	34.66
	Risperidone	20	7.22
	Others	36	13
Anticholinergics (n=126)	Trihexyphenidyl	107	84.92
	Others	19	15.08
Antimaniacs (n=83)	Carbamazepine	41	49.4
	Valproate	34	40.96
	Lithium	8	9.64

problem. However, to date limited information about the psychotropic drug use in the population of central India is available; the study was carried out to find out morbidity pattern of psychiatric diseases and prescribing trends of psychotropic drugs in our hospital.

In the present study, more male patients visited the psychiatry OPD, this finding is similar to many other studies.[13-15] However, it is contrary to the studies done by Mant et al.[16] and Thakkar et al.[17] which shows that psychiatric illness is more common in females.

Mood disorders that is, major depression and bipolar mood disorders accounted for the large majority 316 (61.54%) of the patients. Both these disorders were more common in the age group of 31-45 years. Depression was more common in females, whereas the prevalence of bipolar mood disorders was more in males, which is comparable to the other studies.[14,15,18] It has been hypothesized that this difference could be due to hormonal influence, effect of childbirth and differing psychosocial stress among women.[19]

The average number of psychotropic drugs per prescription was 2.1 ± 0.8, which is comparable with the findings of other studies where it ranged from 2 to 3.3 drugs per prescription.[20,21] Psychiatric polypharmacy refers to the concurrent prescription of two or more psychiatric medications (of the same chemical class or same pharmacologic actions) to treat the same condition.[22] In our study, over 95% of prescriptions contained 1-3 drugs and only 4% of prescriptions contained 4 or more drugs. These findings suggest limited incidence of polypharmacy. It is preferable to keep the number of drugs per prescription as low as possible since polypharmacy leads to increased risk of drug interactions, increased hospital cost[23] and errors of prescribing.[24] Prescriptions with the generic name were just 28.75%, which suggests popularity of brand names among the medical practitioners, which is in contrast to the WHO guidelines, where generic prescription is one of the indicators for rational prescribing. Generic drug prescribing also facilitates cheaper treatment for the patient.

About 96.7% oral and 3.3% parenteral preparations were used, which is comparable with the study done by Dutta et al. where 93.5% oral and 6.5% injectables were used.[25] The only injection prescribed was haloperidol decanoate 50 mg/ml once a month, intramuscularly; it was helpful in cases of poor compliance and failure with oral preparations. Concern about the adverse effects and cost-effectiveness of parenteral route of drug administration, are probably the reasons for the low utilization of depot injection formulation in the psychiatry OPD.

About 20.58% prescriptions contained psychotropic FDCs. Trifluoperazine (typical antipsychotic) plus trihexyphenidyl hydrochloride (central anticholinergic) was the most common FDC prescribed. Prescription of anti-cholinergics with both typical and atypical antipsychotics is very common to prevent extra-pyramidal side-effects (EPS). The use of such FDCs can be considered as rational when used for maintenance therapy in patients who had earlier developed EPS because of antipsychotic alone; however, the routine use of such combination is irrational. Utilization of drugs from the essential medicines list (WHO and Indian) was very high (44.23%). The primary purpose of NLEM is to promote rational use of medicines considering the three important aspects i.e. cost, safety, and efficacy.[12]

The drug utilization pattern in the study population show that anxiolytics (BZD) were the most commonly used psychotropic drugs followed by anti-depressants and anti-psychotics. In our study, more than half of the psychotic patients received adjunctive BZD, which is similar to many other studies.[13,26] Clonazepam (51.83%) being the most common followed by lorazepam (32.32%), suggesting a trend toward the use of shorter acting BZD as continuous and prolonged use of longer acting BZDs has resulted in dependence and may have withdrawal symptoms when the dose of the drug is reduced or stopped.[27] Guidelines for the rational use of BZDs recommend their use for short-term (maximum 4 weeks) or intermittent courses in minimum effective doses, to be prescribed only when symptoms are severe.[28]

With regard to antidepressants, selective serotonin reuptake inhibitors (SSRI) were the most commonly prescribed compared to tricyclic anti-depressants. This trend is similar to those reported by other studies; both among children and in adults.[29,30] SSRI are generally free of sedative effects and safer at higher doses. Better tolerability, combined with

their mild adverse effects, accounts for their popularity as most widely prescribed antidepressants.[31] Escitalopram (39.21%) was clearly the most popularly prescribed SSRI. Escitalopram, has more favorable pharmacokinetic profile, including fewer pharmacokinetic drug interactions than other SSRIs.[32]

Most of the patients (65.34%) received atypical antipsychotics. Olanzapine (45.13%) was the most common antipsychotic drug prescribed followed by haloperidol (34.66%), and risperidone (7.22%). This similar trend of use of atypical antipsychotics was also seen in many studies.[13,25,33] Atypical antipsychotics are commonly prescribed, owing to their better tolerability, low relapse rate, efficacy against refractory cases, better control over negative symptoms and safer adverse event profile.[34] Systematic review has shown that olanzapine is more efficacious than other second generation antipsychotic drugs.[35] While being relatively safe than the typical antipsychotics, their ability to cause sedation should be kept in mind, especially in older patients.

Use of mood stabilizer drugs was restricted mostly to mood disorder patients, carbamazepine (49.4%) was more frequently prescribed in our set up, which is a similar finding in many other studies.[17,36] Lithium was used only in 9.64% patients of bipolar disorder. The concern about its narrow therapeutic index and difficulty in obtaining drug levels, explains its low use in our center.

Trihexyphenidyl, central anticholinergic drug (84.92%) was prescribed in various psychiatric illnesses except in major depression. In schizophrenia, although prescribing frequency of atypical antipsychotic was higher than the typical one, anticholinergic agents were prescribed in the majority of patients. European pharmacoepidemiological study carried out by Broekema et al. also observed that anticholinergics were co-administered with atypical antipsychotic drug in schizophrenia.[37]

This study was necessary to reveal the prescription pattern of psychotropic drugs as part of drug utilization research in mental health. 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.

CONCLUSION

In our study, incidence of polypharmacy was limited. Drug use indicators from the study largely conform to standard recommendations for developing countries. Clonazepam, olanzapine and escitalopram were the most commonly prescribed BZD, antipsychotic, and antidepressants, respectively. Carbamazepine was preferred over lithium as a mood stabilizer. As the percentage of generic drug prescribing is low, the issue of frequent use of brand names needs to be addressed.

We did not study the appropriateness of prescription of the psychotropic drugs with regard to the diagnosis and comorbidities. We also did not evaluate factors such as cost, patient compliance, concerns of the patients about side-effects, and adherence to treatment guidelines while prescribing. Future studies should try to overcome these limitations. The study provides a baseline data for carrying out further utilization studies, which would provide information for improving psychotropic drugs utilization in mental health facilities.

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Conflict of interest None declared
Ethical approval Not required

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