PATTERN OF PSYCHOTROPIC PRESCRIPTION IN A TERTIARY CARE TEACHING HOSPITAL: A CRITICAL ANALYSIS

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ABSTRACT

Objectives: (1) To study the prescription pattern of psychotropic drugs amongst patients attending the psychiatry outpatient department (OPD) in a tertiary care hospital, Mandya, (2) to evaluate patterns and recent trends in psychotropic polypharmacy.

Methods: This was a prospective, cross-sectional and observational study, done over 8 weeks, among patients attending psychiatry OPD. The most recent prescribed psychopharmacological medication of the patients were collected in a standard proforma and analyzed according to World Health Organization (WHO) prescription indicators. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used wherever appropriate.

Results: A total of 405 prescriptions were evaluated. Anti-epileptics (22.9%), antidepressants (19.7%) and antipsychotics (11.0%) were the commonly advocated drug groups in more than half of prescriptions. Phenobarbitone (30.2%), escitalopram (27.9%), and risperidone (48.9%) were commonly used drugs among anti-epileptics, antidepressants, and antipsychotics, respectively. Nutraceuticals constituted 8.7% of total drugs. Percentage of drugs prescribed by generic name was 54.9%. Polypharmacy was prevalent in 2.7% of prescriptions. Percentage of drugs prescribed as fixed-dose combination was 21%.

Conclusion: The WHO guidelines regarding prescription of drugs were followed consistently. The issue of prescribing by brand names need to be addressed. Polypharmacy was advocated for negligible number of subjects and the reasons were justifiable.

Keywords: Prescription audit, Polypharmacy, Psychopharmacological agent.

INTRODUCTION

Newly diagnosed cases in psychiatry and prescription of psychotropic drugs among them have increased tremendously in the present modern world. Study of the prescription pattern will assess the rationality of prevailing treatment practices [1].

Polypharmacy is routinely practiced to treat psychiatric illness [2]. Polypharmacy is defined as the use of multiple medications by a patient [3]. It is more prevalent in elderly patients and increases the risk of side effects and interactions [4,5].

Prescription pattern studies will identify problems before a drug is dispensed and will greatly improve patient care [6].

Hence, the objectives of the current study were to evaluate the prescription pattern of psychotropic medications and recent trends in psychotropic polypharmacy at a tertiary health care center.

METHODS

This was a prospective, cross-sectional and observational study, carried out in the Departments of Pharmacology and Psychiatry at a tertiary care teaching hospital. The patients attending outpatient department (OPD), Department of Psychiatry between months of February 2014 and April 2014 were selected.

The study was initiated after obtaining approval from the Institutional Ethics Committee. Patients' prescription records were used to collect data on the most recent prescribed psychopharmacological medication. Selection was done irrespective of gender, age, and psychiatric diagnosis.

The following data were collected and analyzed:
- Demographic information: Age, sex, occupation, education, marital status, type of family, religion, and locality (urban/rural)

- Drugs categorized into different categories: Antipsychotics, antidepressants, antiepileptics, anxiolytics, mood stabilizers, and others
- Prevalence of polypharmacy, percentages of fixed-dose combinations (FDCs), off-label drugs and addition of nutraceuticals
- Percentage of drugs following guidelines of World Health Organization (WHO) prescription indicators.

Statistical analysis

Data were entered into Microsoft Excel (Windows 7; Version 2007) and analyses done by the Statistical Package for Social Sciences (SPSS) for Windows software (version 18.0; SPSS Inc., Chicago). Descriptive statistics such as frequencies and percentages were calculated for categorical variables. Mean and standard deviation were computed for continuous variables. The graphic representation is used for visual interpretation of the analyzed data.

RESULTS

In the study, a total of 405 prescriptions were analyzed. Male subjects were 50.1%, and females were 49.9% (Table 1). Mean age in years was 36.15±15.45. The majority of them were married (68.4%) and were mainly from rural locality (71.4%).

The most common treated psychiatric illness was epilepsy (27.7%), followed by depression (18.3%), psychoses (13.8%), bipolar disorder (8.1%), migraine (7.9%), and others. Among them, percentages of newly diagnosed and older cases were 3.2% and 96.8%, respectively. Acute therapy was initiated in 1.5% of total cases and 98.5% of subjects were on maintenance therapy. Type 2 diabetes mellitus (5.9%), hypertension (4.7%), cataract (2.0%), hypothyroidism (1.5%) were the common co-associated diseases.

405 prescriptions contained a total of 838 drugs. Anti-epileptics (22.9%) were the most common prescribed psychotropic medication followed

by antidepressants (19.7%), antipsychotics (11.0%), anticholinergics (8.6%), anxiolytics (6.9%), anti-migraine (5.5%), mood stabilizers (4.3%), sedatives (1.2%), anti-Parkinsonian (0.7%), drugs for attention-deficit/hyperactivity disorder (ADHD) (0.7%), alcohol and smoking de-addiction treatment (0.6%), anticholinesterases (0.4%), and miscellaneous drugs (8.7%). Nutraceuticals constituted 8.7% of total drugs and herbal drugs 0.1% (Fig. 1).

Phenobarbitone (30.2%), phenytoin (25%), carbamazepine (17.2%), and valproate (14.6%) were the anti-epileptic drugs (AEDs) most commonly prescribed. Escitalopram (27.9%), fluoxetine (25.5%), and amitriptyline (14.5%) were the routinely prescribed antidepressants. Risperidone (48.9%) and olanzapine (29.3%) were the commonly prescribed antipsychotics (Table 2).

Clonazepam (79.3%) was the most common anxiolytics prescribed. Flunarizine (45.7%) and amitriptyline (36.9%) were the commonly prescribed drugs for treating migraine. Valproate (58.3%) outnumbered lithium (33.3%) among mood-stabilizers.

Alprazolam (40.0%) was the commonly prescribed sedative. Anti-Parkinsonian drugs administered were combination of levodopa-carbidopa (66.7%) and ropinirole (33.3%). Clonidine (66.7%) and atomoxetine (33.3%) were the two drugs prescribed for the treatment of ADHD. Disulfiram and nicotine gum were the drugs given for alcohol and smoking de-addiction, respectively. Trihexyphenidyl was the anticholinergic drug used along with an antipsychotic. Donepezil was the anticholinesterase used for cognitive impairment.

Among miscellaneous drugs, analgesics and antiemetics were the drugs routinely prescribed. Modafinil was recommended for 1.4% of subjects.

Nutraceuticals prescribed were mainly vitamin and mineral preparations (Table 3).

The prescription audit was analyzed for total of 838 drugs, from 405 prescriptions. The dosage form, dose, route of administration, and frequency was mentioned for 99.0%, 84.5%, 98.3%, and 87.1% of drugs respectively. Duration of drugs to be taken was mentioned for 64.4% and quantity to be dispensed was written for 65.1% of drugs. Percentage of drugs prescribed by generic names was 54.9% and percentage of brand names was 45.1% (Fig. 2).

Monotherapy was instituted for 32.8% subjects. Polypharmacy (≥5 drugs) was prevalent in 2.7% of prescriptions (Table 4). Treatment of co-morbid conditions (45.5%), augmentation of the effect of primary drug (27.3%), prevention of adverse effect0 of primary drug (18.2%) and self-medication with "over the counter (OTC)" drugs (9.0%) were the common reasons for institution of polypharmacy.

Drugs prescribed as FDC were 176 (21.0%). Among FDCs prescribed, combination of pregabalin and methylcobalamin was most common prescribed (27.8%), followed by combinations of escitalopram and clonazepam (19.9%), naproxen and domperidone (18.2%), and other drug combinations.

The average number of drugs per prescription was 2.07. The percentage of drugs prescribed by generic name was 54.9%. Most of the drugs were

Table 1: Socio-demographic profile of patients

Demographic data	Number of patients	Percentage
Age (in years)		
≤15	27	6.7
16-25	83	20.5
26-35	128	31.6
36-45	69	17.0
45-55	48	11.9
>55	50	12.3
Education		
Illiterate	133	32.8
Primary and high school	137	33.8
Intermediate	89	22.0
Graduation	38	9.4
Post-graduation	8	2.0
Occupation		
Housewife	144	35.6
Student	64	15.8
Agriculturist	43	10.6
Business	36	8.9
Others	63	15.6
Unemployed	55	13.6

Table 2: Prescription pattern of different drugs in the study (n=838)

| Drug groups	Number of drugs	Percentage
Antiepileptics (n=192)		
Phenobarbitone	58	30.2
Phenytoin	48	25.0
Carbamazepine	33	17.2
Valproate	28	14.6
Clobazam	18	9.4
Others	7	3.6
Antidepressants (n=165)		
Escitalopram	46	27.9
Fluoxetine	42	25.5
Amitriptyline	24	14.5
Mirtazapine	20	12.1
Sertraline	18	10.9
Others	15	9.0
Antipsychotics (n=92)		
Risperidone	45	48.9
Olanzapine	27	29.3
Quetiapine	9	9.8
Chlorpromazine	6	6.5
Others	5	5.4
Mood stabilizers (n=36)		
Valproate	21	58.3
Lithium	12	33.3
Others	3	8.4
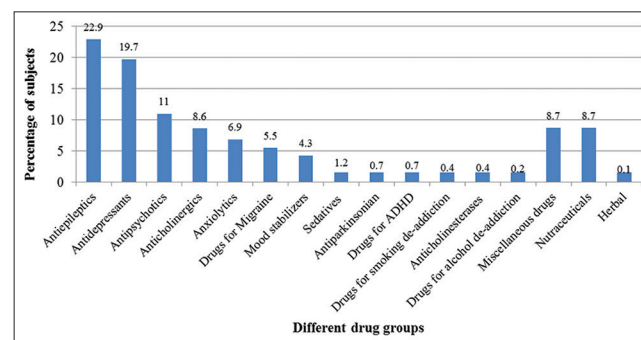
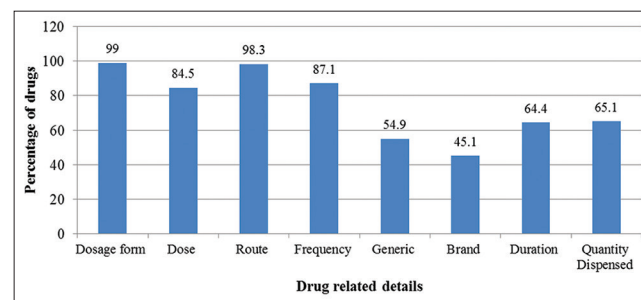**Fig. 1: Prescription pattern of psychiatry drugs (n=838)**

Fig. 2: Prescription audit findings of psychiatry drugs (n=838)

Table 3: Prescription pattern of nutraceuticals (n=73)

S. No.	Nutraceuticals	n (%)
1	Pregabalin and methylcobalamin	26 (35.6)
2	Vitamin B complex	17 (23.3)
3	Alpha lipoic acid and methylcobalamin	6 (8.2)
4	Methylcobalamin, benfotiamine, alpha lipoic acid and biotin	5 (6.8)
5	Vitamins A, B, E, and D	5 (6.8)
6	Ferrous sulfate and folic acid	4 (5.5)
7	Methylcobalamin	4 (5.5)
8	Benfotiamine, alpha lipoic acid, methylcobalamin and pyridoxine	3 (4.1)
9	Folic acid, methylcobalamin, alpha lipoic acid and vitamin B	3 (4.1)

Table 4: Number of drugs prescribed per patient (n=405)

Number of drugs prescribed	Number of prescriptions	Percent	Polypharmacy (≥5 drugs)
One	133	32.8	No
Two	161	39.8	No
Three	74	18.3	No
Four	26	6.4	No
Five	9	2.2	Yes
Six	2	0.5	Yes

oral formulations and only 2.4% of injectables were prescribed. The percentage of drugs prescribed from essential drug list was 70.4%.

DISCUSSION

The present study is an attempt to evaluate the pattern of prescriptions of the patients visiting psychiatry OPD in a government set-up tertiary care teaching hospital.

The most common treated psychiatric condition was epilepsy (27.7%). Older anti-epileptics such as phenobarbitone (30.2%), phenytoin (25.0%), carbamazepine (17.2%), and valproate (14.6%) were routinely prescribed. Among benzodiazepines, it was clobazam (9.4%) which was the most common prescribed, followed by clonazepam and lorazepam. The results obtained are in accordance with other studies conducted where older AEDs are frequently used than newer [7-11]. The study by Ferrer *et al.* have concluded that newer AEDs were highly used for the routine treatment of epilepsy [12].

Depression (18.3%) was the second most common ailment being treated. Among antidepressants, selective serotonin reuptake inhibitors (SSRIs) were preferred over tricyclic antidepressants (TCAs). Frequently used SSRIs were escitalopram (27.9%), fluoxetine (25.5%), and sertraline (10.9%). TCAs commonly used were amitriptyline (14.5%) and imipramine (3.6%). Among atypical antidepressants mirtazapine (12.1%) was commonly prescribed followed by venlafaxine (2.4%) and bupropion (0.6%). Similar results were observed with many other studies where SSRIs are preferred over TCAs [13-17]. In our study this finding is a beneficial aspect because current treatment guidelines recommend use of SSRIs as the first-line agents in patients of depression [15].

Furthermore in our study, the majority of patients received combination of antidepressant and benzodiazepines. Particularly the FDC of escitalopram and clonazepam 19.9% was prescribed under different brand names. The addition of a benzodiazepine to an SSRI can provide more rapid improvement in depression and more rapid stabilization of panic or social phobia symptoms than the SSRI alone [18,19].

Psychosis (13.8%) was the third common condition being treated and 11% of drugs prescribed contained antipsychotics. Atypical antipsychotics were preferred over typical antipsychotics. Risperidone (48.9%) and olanzapine (29.3%) were commonly prescribed. Quetiapine, amisulpride, and aripiprazole were other atypical antipsychotics prescribed. Among typical antipsychotics, chlorpromazine (6.5%), fluphenazine (2.2%), and haloperidol (1.1%) were prescribed. Fluphenazine and haloperidol were used as injectable formulations. Trihexyphenidyl was the only anticholinergic drug co-prescribed with antipsychotics to avoid extrapyramidal side effects. Similar results were observed in many other studies, upholding the use of atypical antipsychotics over typical antipsychotics [20-22].

Among mood stabilizers, valproate (58.3%) was used more common than lithium (33.3%), followed by quetiapine (5.6%) and olanzapine (2.8%). The result is in line with the study conducted by Grover *et al.* [23]. This is in contrast to the study done by Trivedi *et al.*, who concluded that lithium is most frequent prescribed, followed by valproate and carbamazepine [24].

Among anti-parkinsonian drugs, the combination of levodopa, and carbidopa (66.7%) were more common recommended, followed by ropinirole (33.3%). The result is similar to other studies [25].

Nutraceuticals accounted for 8.7% of drugs. Vitamin and mineral preparations were most common prescribed. The result is in congruence to study done by Balhara *et al.* [26].

The polypharmacy was instituted for 2.7% of prescriptions. The reasons for prescribing polypharmacy is well justified except for the self-medication by patients themselves with OTC drugs, which could be prevented. There was no off-label use of drugs in any prescription.

The average number of drugs in each prescription was 2.07%, percentage of drugs prescribed by generic name was 54.9%, percentage of injectables was 2.4% and percentage of drugs prescribed from essential drug list was 70.4%, all of which were in compliance with WHO recommendations of ≤2, 100%, 10%, and 70%, respectively for each variable [27,28].

The study had few limitations like short study period and was a single-setting study.

CONCLUSION

The WHO guidelines regarding prescription were followed consistently. There is a need to advocate prescribers to mention in the prescription regarding duration of therapy and the total amount of drugs that should to be dispensed. Furthermore, the issue of prescribing by brand names needs to be addressed. Polypharmacy was advocated for negligible number of subjects and the reasons were justifiable.

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