



## EVALUATION OF PSYCHOTROPIC DRUGS USE PATTERN AMONG OUT PATIENTS ATTENDING PSYCHIATRY DEPARTMENT AT GOVERNMENT MEDICAL COLLEGE AND HOSPITAL, NAGPUR: A CROSS SECTIONAL STUDY

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### ABSTRACT

Psychotropic drugs are costly, imparting pill burden on patients and monitorial burden on health care system due to irrational prescribing. Our aim was to find drug utilization pattern amongst out-patients attending the psychiatry out-patient department of Government Medical College, Nagpur. This was the prospective, cross sectional and observational study over 22 weeks on 515 newly diagnosed psychiatric patients. Results are expressed in percentage (%). Average drugs per prescription were  $2.05 \pm 0.006$  in men and  $1.90 \pm 0.05$  in women. 100% drugs were prescribed by brand names. The cost of drugs per prescription in Indian rupees was  $68.33 \pm 7.30$ . Most common drug group prescribed was antidepressant (60.4%). Olanzapine use was highest (26.6%). Irrational co-prescription, antidepressant + BZD (15.5%) was commonest. Women were prescribed more antidepressants (Tricyclics > SSRI) (17.7%,  $\chi^2=4.26$ ,  $p<0.039$ ). Less than 45 years accounted for most prescription. The common psychiatric illness was "schizophrenia and other psychiatric illnesses". None of drug was prescribed by generics. So we are at conclusion that prescription pattern is irrational and this should be intervened by educating prescribers about rational prescribing in psychiatry.

**KEYWORDS** : Prescription audit, Drug utilization, Antipsychotics, Antidepressants, Polypharmacy



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## INTRODUCTION

Drug utilization studies assess appropriateness of pharmacotherapy with important implications for clinical practice as they provide a clear picture of real world use pattern and allow identifying areas that need change and improvement. It also provides insight in to efficacy of drugs.<sup>1</sup>

Many drug utilization studies have shown considerable variations in prescribing practices with high rate of polypharmacy, which is generally used when there is failure to control symptoms.<sup>2</sup>

Since 1950s, psychotropic drugs have proliferated and diagnosed cases also increased.

More studies to ascertain clinical appropriateness of prescribing practices are needed. Several observational studies nationally and internationally have analyzed the pattern of psychotropic drug prescribed in hospital/wards/outpatient setting.<sup>3</sup> Trends towards prescribing multiple, new costly drugs, prescribing in children, women, old (low dose) and off label use are increasing.

Retrospective drug utilization review can be used to identify problems in prescribing patterns through the analysis and interpretation of aggregate archival data on drug prescriptions. This process has no immediate effect on patient care but can identify trends and prompt intervention.

Prospective drug utilization study can have an immediate and direct effect on patient care by detecting problems before a prescription is dispensed.<sup>4</sup>

Therefore, the present study was carried out to understand and evaluate the prescription pattern of psychotropic medications in government medical college and hospital, Nagpur. This study also aims to assess the quality of health care with respect to standard of medical treatment.

## MATERIALS AND METHODS

This was the prospective, observational study over 22 weeks, carried out in the Department of Pharmacology and Department of Psychiatry, Government Medical College and Hospital (GMCH) Nagpur, India. The patients were selected from Outdoor Patients Department of Psychiatry GMCH Nagpur. The study was conducted from 20<sup>th</sup> October 2006 to 9<sup>th</sup> March 2007.

Study groups consist of 515 newly diagnosed patients with psychiatric illnesses without having any other physical ailments or not on other medication due to any other illness like diabetes, hypertension etc. Selection is done irrespective of gender, age and psychiatric diagnosis.

The protocol for study was submitted to the Institutional Ethics Committee and the study was started after approval. Informed consent was waived, as it was observational study without having concern with patients and any intervention.

### ***Collected data was analyzed as following***

- Demographic information e.g. Age wise and gender wise distribution of patient population.
- Diagnosis of individual patient as done by psychiatrist using DSM IV criteria.
- Drugs were categorized in to five categories viz. antipsychotics, antidepressants, antiepileptics, anxiolytics, mood stabilizers.
- Percentage of drugs given by brand and generic names.
- Total number of drug classes and drugs were calculated.
- Costs were calculated in Indian rupee with the help of CIMS, MIMS and information from retailer for each prescription.
- Percentages of fixed dose combinations were calculated for men and women.

- Number of drugs per prescription was calculated.
- Most common drug prescribed and most common prescribed class of drug was found out to know which drug is consumed most commonly.
- Psychotropic drug combinations were calculated for men and women
- Off label uses of drugs means use of drug other than for recommended indication were calculated in percentage.

Results were expressed in percentage (%) and mean  $\pm$  Standard Error of Mean (SEM). Fisher's Exact Test was applied where applicable. Analysis was done using "Graphpad InStat" (Version 3.05) and "statistix" software (version 8<sup>th</sup>).

## RESULTS AND OBSERVATIONS

In our study, total 1023 individual drugs were prescribed and among 515 psychiatric patients, 293 (56.89%) were men and 222 (43.10%) were women patients.

### Drug utilization

There were 42 drug classes. Average number of drugs prescribed were  $1.98 \pm 0.04$  (Mean  $\pm$  SEM), in that,  $2.05 \pm 0.06$  in men and  $1.90 \pm 0.05$  in women.

When genders compared, Men received more medicines. Only 38.05% of the patients out of 515 received single drug, while rest received more than single drug (polypharmacy).

**Table 1**  
**Number of drugs per prescription**

NUMBER OF DRUGS	MEN (%)	WOMEN (%)
1	112 (38.22)	84 (37.83)
2	87 (29.69)	81(36.48)
3	68 (23.20)	53 (23.87)
4	19 (6.48)	3 (1.35)
5	7 (2.38)	1 (0.45)

The most common psychiatric illness group was "Schizophrenia and other psychiatric disorders" according to DSM IV criteria (n=111, 21.55%) and other were, organic psychiatric syndromes (n = 82, 15.92%), somatoform disorders (n = 81, 15.73%), substance related disorders (n = 76, 14.76%), mood disorders (n = 64, 12.43%), others (n = 60, 11.65%). Average cost of drug per prescription and daily cost of medication was  $68.33 \pm 7.30$  and 4.55 Indian rupees respectively. The cost of "organic psychiatric syndrome" was high amongst all groups (70.4 rupees). "Cost of prescription" is an important determinant of compliance in developing countries and especially true in psychiatry as treatment is

often for long duration with high level of non compliance (20-50%).

Not a single drug was prescribed by its generic name showing impact of medicine promotion on psychiatrist. Psychotropic combinations were prescribed to 46.79% of total 515 patients.

In gender based prescribing frequency of psychotropic medications of different categories, use of tricyclic antidepressants was more in women (n=91, 40.99%, p<0.05) compared to SSRIs.

In prescription frequency analysis among the patient attending psychiatry out patient department according to age, majority were in the age group from 21 -35 yrs (n = 248, 48.15%)

**Table 2**  
**Distribution of Patients According To Age Group**

Age Group (years)	Number of patients (percentage of population)	
	Men (n=293) (%)	Women (n=222) (%)
5 - 20	33 (11.26)	42 (18.91)
21 - 35	157 (53.58)	91 (41.99)
36 - 50	69 (23.54)	73 (32.88)
51 - 65	26 (8.87)	12 (5.40)
66 - 80	8 (2.73)	4 (1.80)

The commonly prescribed categories of medications in descending order of frequency were antidepressants (n=311, 60.38%), antipsychotics (n=251, 48.73%), anxiolytics (n=146, 28.34%) and antiepileptics (n=62, 12.03%).

And in above classes, tricyclic antidepressants (n=161, 31.26% (amitriptyline 20.19%)),

Olanzapine (n=137, 26.6%), clonazepam (n=79, 15.33%) and carbamazepine (n=22, 4.27%) was highest prescribed drug respectively.

Off label use of psychotropics was found in 53 prescriptions (10.29%).

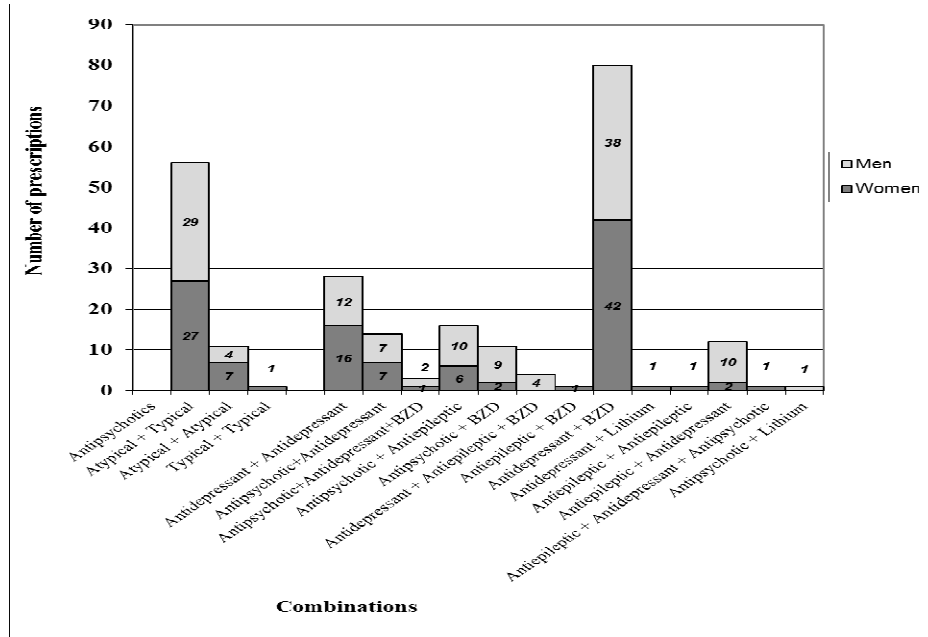
**Table 3**  
**Off-label use of psychotropic drugs**

DRUG	MEN	WOMEN
<b>1) Antipsychotics</b>		
a) Haloperidol	1	0
b) Olanzapine	15	12
<b>2) Antidepressants</b>		
a) Escitalopram	0	2
b) Fluoxetine	1	2
c) Amitriptyline	1	0
<b>3) Antiepileptics</b>		
a) Carbamazepine	1	2
b) Topiramate	16	0

The most common psychotropic combination used was Antidepressant + BZD (n=80, 15.53%) followed by Typical + Atypical antipsychotic

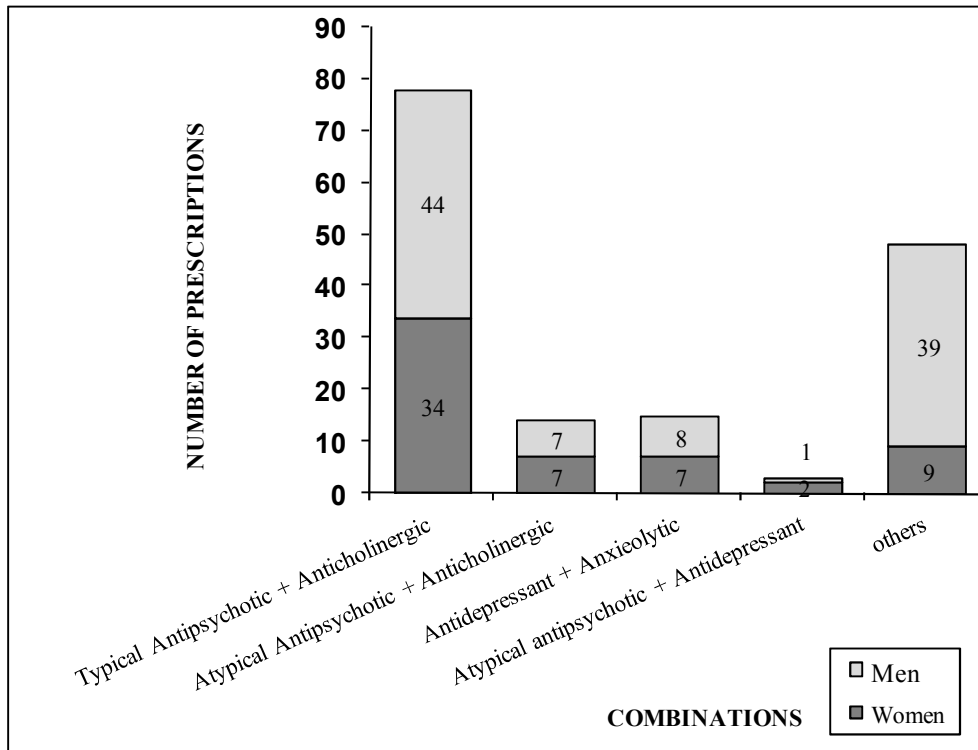
(n=56, 10.87%) and Antidepressant + Antidepressant (n=28, 5.43%)(Figure 1)

**Figure 1**  
**Prescription frequency of psychotropic drug combinations**



*Typical antipsychotic + Anticholinergic (n = 78, 15.14%) was most frequently used fixed dose combination (Figure 2)*

**Figure 2**  
**Psychotropic Fixed Dose Combinations**



## DISCUSSION

Prescription gives insight into nature of health care delivery system in drug utilization research.<sup>1</sup> Several important findings are revealed by this study, "schizophrenia and other psychiatric disorders" (n=111, 21.55%) was the most common group of psychiatric conditions found in patients attending psychiatry out patient department. Same finding was observed in other studies.<sup>5,6</sup> 21-50 years was the most common age group to whom psychotropic prescriptions were given. Increasing use of psychotropic drugs in this age group may be due to increased incidence of mental ill health, improved mental health literacy in general population, reduction in stigma associated with mental illness, increase in drug treatment option and due to more vigorous marketing of such medications.<sup>7</sup>

Men received more psychotropic prescriptions than women.<sup>8,9</sup> However, tricyclic antidepressant prescription were more significant in women (n=91, 40.99%).

Single drug was received by only 38.2% of population suggesting trend of polypharmacy. The finding was not different for men and women. These results are in line with an Italian study conducted by Gianni Tognoni.<sup>10</sup> Antidepressant prescriptions were more (60.38%) followed by that of antipsychotics (48.73%). In studies conducted by Susan L. Lakey and Robert Goldney, antidepressant was the most common class of drug.<sup>11,12</sup>

Majority of patients were prescribed psychotropic drugs from 5 different categories or different compounds from same category. Other studies too consistently found polypharmacy like our, and trend is consistent even after prescription monitoring.<sup>13,14,15</sup> In difficult to treat cases like treatment resistant schizophrenia or depression, mixed diagnosis and double diagnosis, drug combination is needed. But there is a lack of evidence based strategies to guide this practice.<sup>16</sup>

In our study 61.5% of the prescriptions were having polypharmacy and is in line with that of

conducted by Carlos De Las Cuevas and Ann M Mortimer who found that incidence of polypharmacy was 41.9% and 100% respectively.<sup>16,17</sup>

Atypical antipsychotic use in therapy is due to the improved adverse effect profile such as less extra pyramidal side effects or reduced prolactin secretion. Its co-prescription with typical antipsychotic is likely to nullify this potential benefit.<sup>13</sup> Such use is inappropriate. Typical and atypical antipsychotics together had shown to increase frequency of EPSE and early death.<sup>14,15</sup>

Recent international guidelines for schizophrenia do not recommend antipsychotic polypharmacy as it leads to high dose prescribing.<sup>2,18,19,20</sup>

In this study olanzapine has been used as off label for mental retardation (n=4), bipolar disorder (n=6), organic delirium state (n=1), depression (n=1), insomnia (n=1), organic brain syndrome (n=1), mania (n=2), post ictal confusion (n=1), dementia (n=6), seizure disorder (n=2), delirium (n=1) and obsessive compulsive disorder (n=1). Prescribing in such a way needs a careful and documented analysis of the potential risks and benefits. Carbamazepine is under investigation for aggression and self-injurious behavior in mental retardation, but still was given to three patients.<sup>21</sup> Haloperidol was given for "Hypochondriasis" but such indication is hardly found in standard textbook.<sup>22</sup> Incidences of tardive dyskinesia are more in affective disorders than in schizophrenia with use of typical antipsychotics.<sup>13</sup> C. Stewart and Stephen J Kogut found that off label use of atypical antipsychotics were 70% and 33% respectively.<sup>18,23</sup>

Anticholinergics were concomitantly used with typical as well as atypical antipsychotics. This could be due to unawareness of prescribers to advantages of atypical over typical antipsychotics or false claims of low incidence of EPSE with atypical antipsychotics by marketing people. Prescribers' explanation to this practice is to prevent occurrence of adverse drug reaction to typical antipsychotic. But such

practice is wrong as it is increasing burden on patient in the form of money as well as number of drugs. Anticholinergics are not for prevention of EPSE; still it is very famous practice.<sup>5,24,25</sup>

Our finding is that, anticholinergic prescription was along with both typical (as fixed dose combination) as well as atypical antipsychotics. Antidepressants and antipsychotic co-prescription may be prescribed to tackle the negative side effects of psychosis. The efficacy and safety of such co-prescription has been insufficiently investigated.

Tricyclic antidepressant was the most commonly prescribed drug class and in that amitriptyline was the most common drug. This finding matches with the study Shalley Moore et al.<sup>26</sup>

Though recent trend is shifting towards SSRIs, our prescribers are still hanging on tricyclic antidepressants. It may be due to cost factor availability of tricyclics (amitriptyline) free of cost in our hospital.

BZD were prescribed with antidepressants (15.53%). The potential benefits of adding a benzodiazepine to an antidepressant must be balanced judiciously against possible harms including development of dependence and accident proneness. Furukawa TA and his colleagues conducted trial on comparison between antidepressants plus benzodiazepine and benzodiazepine alone in patients with major depression. The reviewers report that a combination of benzodiazepines with antidepressants works in favor for the treatment of depression, because it decreases dropouts from treatment and it increases short-term response up to four weeks<sup>27</sup>.

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Fluoxetine was given in the patients of seizure (n=3) but textbook says, "Seizures have been reported in 0.1 to 0.2% of patients with SSRIs".<sup>28</sup> Though incidence is low, it still exists.

Use of SSRIs in children and adolescent is matter of concern. Data concerning safety and efficacy of antidepressants in pediatric age group are still limited and there is increasing number of suicides. US-FDA on this basis asked manufacturer to include "black box" warning in labeling of SSRIs.<sup>29</sup>

No drug was prescribed by generic name. Prescribers are using brand names may be due to marketing strategies. This has to be changed to reduce cost incurred by patients.

Topiramate (n=16, 3.10%), which is an antiepileptic drug, was used exclusively for alcohol dependence. Johnson found that patient taking topiramate achieved more abstinent days and lower craving for alcohol<sup>30</sup>

## CONCLUSION

Prescription practices in Government Medical College, Nagpur showed high rate of polypharmacy, variation in prescription practices, prescription rate was higher in men (antidepressants higher in women) between 21-50 yrs age. This study may expand the existing data on prescription practices and misuse. Such audit gives scope for prescriber to improve prescription practice and rational use of medicine. The issue of prescribing by brand names needs to be addressed. There is scope to extend this study by evaluating drug compliance and adverse drug reactions of psychotropic drugs.

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