A Retrospective Drug Utilization Study on Psychiatric Illness in a Tertiary Care Teaching Hospital

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Authors’ contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Psychiatric disorders are now widely recognized as a major contributor to the global burden of disease. It has been described that there is an increased risk of adverse effects when more than one psychotropic drug is prescribed. Knowledge of the pattern of utilization of drugs in the general population can be achieved through the conduct of drug utilization studies. The present study has therefore been conducted to observe the pattern of drug use in psychiatry patients in a tertiary care hospital.

Aim and Objective:

To assess the epidemiology of various psychiatric illnesses among the study population
To assess the Prescribing Pattern of drugs in Psychiatric Illness.
To assess the drug-drug interactions in the prescription using MICROMEDEX.

Methodology: A retrospective descriptive observational study was performed in a tertiary care hospital. A total of 100 prescriptions were collected from MRD.

Results: The study reported that 66% of patients were males and 34% were females. The average number of drugs and psychotropic drugs per prescription is six and four respectively. Around

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61.98% of drugs in the prescription are psychotropic drugs, among that 40.17% of benzodiazepines are majorly used, followed by 34.27% of antipsychotics. Almost 95 prescriptions had a minimum of one drug-drug interaction. The average number of psychotropics per prescription was higher than in studies. The average number of drugs per prescription was 5.84, which lead to polypharmacy. **Conclusion:** Using WHO indicators prescription analysis was done and it showed some deviation from the standard value which can be improved. Polypharmacy was noted in this study. Most of the drug is prescribed in the brand name which should be avoided.

Keywords: Drug utilization research, psychotropic drugs; Polypharmacy; psychiatric illness; prescribing pattern.

1. INTRODUCTION

Psychiatric disorders are now widely recognized as a major contributor to the global burden of disease. Pharmacotherapy, psychotherapy, and psychosocial rehabilitation are the three components in the management of these disorders. Pharmacotherapy forms a significant part of the comprehensive treatment of these illnesses. In the treatment of most mental and behavioral disorders, psychotropic drugs like anxiolytics, hypnotics, antidepressants, and antipsychotics play an important and major role [1]. The usage of the minimum number of drugs to acquire the finest possible therapeutic effect in a short period and at an affordable cost is known as rational drug prescribing [2]. Because of heeded inadequate response to monotherapy [3-7], psychotropic polypharmacy (i.e., the concurrent prescription of multiple psychotropic medications) is common in clinical practice, although favorable evidence is limited [6]. Australian literature discloses that taking more than one antipsychotic drug at a time is more likely to experience adverse events than those who take one antipsychotic at a time. It has been reported that there is an increased risk of adverse effects in psychotropic polypharmacy compared to monotherapy [2,6] High dose treatment is caused by antipsychotic Polypharmacy; in the treatment of the mental and behavioral disorders, EPS occurs as an important risk because they may impair quality of life, be annoying and lead to poor adherence. The risk of EPS induced by antipsychotics is reported to increase dose-dependently. Many reports claim that selective serotonin reuptake inhibitor (SSRI), an antidepressant, induces EPS. Certain guidelines recommend monotherapy as the basis for the treatment and indicate that combination therapy should be considered only after some monotherapies have failed [9,8]. Knowledge of the pattern of utilization of drugs in the general population can be achieved through the conduct of drug utilization studies. There is very minimal data on drug utilization of psychotropic medicines, particularly in the Indian context. The present study has therefore been conducted to observe the pattern of drug use in psychiatry patients in a tertiary care hospital.

2. METHODOLOGY

A retrospective observational study was directed. Strengthening the reported observational studies in epidemiology (STROBE) guidelines were implemented in the construction of protocol and manuscript [10]. The study was taken from the medical records department, SRM Medical College Hospital and Research Centre, Kattankulathur. The study was carried for six months (November 2019-march 2020). A total of 100 prescriptions were analyzed based on standard guidelines.

The inclusion criteria for this study is,

- Prescription of patients above 18 years of age comprising both genders, diagnosed from different psychiatry illnesses.
- The Prescription consists of at least one psychotropic drug.

The exclusion criteria for this study is,

- A Patient who voluntarily got discharged and with an incomplete case profile.
- Prescription without psychotropic medication.

3. RESULTS AND DISCUSSION

A total of 100 prescriptions were analyzed, demographic data revealed that 66% of patients with psychiatric illness were male and 34% were females. It clearly shows that males were dominantly affected with the psychiatric disorder
than females. In this study, 82% of 20-50 year age group population have been admitted with psychiatric illness. These results were similar to the findings of Thakkar K. B et al. [10].

According to Social history data analysis among 100 patients, 26% were alcoholics, 3% were smokers, 3% were tobacco users and 2% of patients were both alcoholics and smokers. 66% of patients with a nil history of social habit.

The epidemiology of psychiatric illness has been calculated, 26% of patients were affected by bipolar disorder and the subsequent population was affected by schizophrenia 18%. Minority patients were affected with mental and behavioral disorders 15%, psychosis 15%, and depressive disorder 13%. The Least affected psychiatric disorder was insomnia (1%).

In our study, we have found that 45% of patients had no history of comorbid conditions and 65% of the population had comorbidities. In that 10% had hypertension, 15% had diabetes mellitus, 15% with a seizure disorder, 6% of thyroid disorder, and 4% with liver disease. Minority conditions were asthma (2%), CVD (2%), and tuberculosis (1%). Our study shows that Patients with comorbidities (65%) were more prone to psychiatric disorders. Similarly from Singh et al (8) study, we can infer that the prevalence of comorbidities in psychiatric patients is higher than that in the general population.

The prescribing pattern of drugs in the psychiatric department was analyzed. (*Tables 1 and 2*) The most commonly prescribed drugs were benzodiazepines (40.17%). In that nitrazepam was prescribed predominantly 57.34% followed by lorazepam 28.67%. In some studies, they have mentioned that benzodiazepines are safe to prescribe though it reduces the requirements of anti-cholinergic there is no assurance for the improvement in mental state. Prolong use of benzodiazepines can induce adverse effects like addiction potential, memory impairment, depression, and dependence outweighed benefits. Also in some studies, it shows increased mortality [1]. These drugs are supposed to be used for a short duration, four weeks maximum, or else the minimum effective dose must be given in intermittent doses Table 3.

The next commonly prescribed drug is antipsychotics (34.27%). In this risperidone (38.10%) followed by haloperidol (29.50%) then olanzapine (19.79%) and ziprasidone (12.6%) were prescribed. Atypical were commonly prescribed because of their known advantages. Also, they are known to improve the impaired cognitive functions of psychotics. Our findings were contrary to a study by Mogali SM et al [11] where olanzapine was 75% followed by risperidone 10.7%. The national institute for clinical excellence (NICE) guidelines 2010 says that there is no longer emergent to prescribe an atypical drug as first-line treatment. Table 4.

### Table 1. Prescribing pattern of drugs in psychiatry

| Category of drugs          | No. of drugs (589) | Percentage (100%) |
|----------------------------|--------------------|-------------------|
| Anti-psychiatric drugs     | 367                | 61.98             |
| Gastro intestinal agents  | 31                 | 5.30              |
| multivitamin               | 98                 | 16.78             |
| Anti-emetic                | 11                 | 1.88              |
| Anti-hypertensive          | 09                 | 1.54              |
| Anti-cholinergic           | 54                 | 9.24              |
| Anti-diabetic              | 04                 | 0.68              |
| antiepileptic              | 09                 | 1.54              |
| others                     | 06                 | 1.03              |

### Table 2. Prescribing pattern of psychotropic drugs

| Drugs                   | No. of drugs(N=356) | Percentage (100%) |
|-------------------------|---------------------|-------------------|
| benzodiazepines         | 143                 | 40.17             |
| Anti-convulsant         | 48                  | 13.48             |
| antipsychotics          | 122                 | 34.27             |
| Anti-depressants        | 43                  | 12.08             |
Besides this anticonvulsants were prescribed around (13.48%). In this sodium valproate was majorly given. Another commonly prescribed drug was anti-depressants (12.08%). In the SSRI category, escitalopram (21) (48.83%) followed by fluoxetine [7] (30.54%) was given mainly. Then clomipramine (09) (20.93%), a tricycle antidepressant was prescribed. From this, we can conclude that SSRI was prescribed more frequently used than TCA drugs. SSRIs are generally known for the absence of sedative effects and are safe from side effects. Fine tolerability, with mild adverse effects, makes it more popular as the most widely prescribed antidepressant [12-13]

The Average number of psychotropics per prescription was 4%, which was found to be higher than that found in other studies, where it ranged between 2.3 to 3 drugs per prescription [10]. The average number of drugs per prescription was found to be 5.84. The number of drugs prescribed in generic name was 27.56% and most of the drugs were prescribed in the brand name. All these factors contribute to polypharmacy which eventually leads to poor compliance, increased side effects, and drug-drug interactions. The reason for polypharmacy maybe is credited to the complexity of presentation in psychiatric illness and the presence of multiple commodities in the elderly [9]. Around 43% of patients have been prescribed about 5-10 medications. Followed by 29% of prescriptions with >10 medications and 28% with 0-5 drugs Table 5.

Among 100 prescriptions, 95 prescriptions were found with a minimum of one drug-drug interaction. Major interactions 26 (9.42%) and moderate interactions 241(87.32%) and minor interactions 9 (3.26%) were found. Most of the psychotropic drugs that were involved in interactions were Lorazepam, trihexyphenidyl, Sodium valproate, and chlorpromazine Table 6.

| Drug Name | No. of Drugs (N=143) | Percentage (100%) |
|-----------|----------------------|-------------------|
| Nitrozepam | 82                   | 57.34             |
| lorazepam  | 41                   | 28.67             |
| oxcarbazepine | 20          | 13.97             |

| Drug Name          | No. of Drugs (N=122) | Percentage (100%) |
|--------------------|----------------------|-------------------|
| Typical Haloperidol| 36                   | 29.50             |
| Atypical Risperidone| 55                 | 38.10             |
| Olanzapine         | 19                   | 19.79             |
| Ziprasidone        | 12                   | 12.66             |

| Drug Use Indicators                                      | Result   |
|----------------------------------------------------------|----------|
| Total no. of Prescriptions analysed                      | 100      |
| Total no. of Drugs Prescribed                            | 589      |
| Average no. of Drugs Per Prescription                    | 6        |
| Average no. Psychotropic Per Drugs per Prescription      | 4        |
| Percentage of Psychotropic drugs Prescribed by generic name (%) | 27.56    |
| Percentage of Injectables Prescribed (%)                 | 16.45    |

| Severity of DDI | No. of Patients (276) | Percentage (100%) |
|-----------------|-----------------------|-------------------|
| MAJOR           | 26                    | 9.42              |
| MODERATE        | 241                   | 87.32             |
| MINOR           | 09                    | 3.26              |
4. CONCLUSION

Drug utilization studies for psychotropic drugs were carried out and their results were analyzed. In our work, we have listed that male patients were dominantly affected by psychiatric illness. In the total population, most of the cases had bipolar disorder. The most administrated drug was benzodiazepines. The age and gender did not affect the prescribing pattern of psychotropic drugs. Some deviation from standard values were found out by prescription analysis using WHO indicators can be improved. The average number of psychotropic drugs per prescription is four. Polypharmacy is noted in our study, this may lead to adverse effects, poor compliance, and drug interactions. In our study, most of the drugs were prescribed by their brand name (72.43%). Drugs should be prescribed using the generic name as this can improve compliance and can reduce financial burdens to patients. Antipsychotics were highly prescribed. In antipsychotics, we have found that haloperidol usage must be limited since it induces major adverse effects [1] Usage of benzodiazepines has to be reduced. Usually, long-term usage of benzodiazepines induces adverse effects. The above-mentioned points must be considered and proper steps should be taken to avoid inadequacy. Furthermore, the study can be extended by evaluating the safety and efficacy of psychotropic drugs.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by the personal efforts of the authors.

ETHICAL APPROVAL

The study was approved from the institutional ethics committee (IEC).

CONSENT

As per international standard or university standard, patient’s written consent has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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