



RESEARCH ARTICLE

Assessment of adverse drug reactions of psychopharmacological drugs in patients of psychiatric disorders

Rani Kumari ^a, Rachna Gupta ^{b,*}, Manjeet Singh Bhatia ^c, Suresh Kumar Gupta ^a

^a Department of Clinical Research, Delhi Pharmaceutical Science and Research University (DPSRU), New Delhi, India

^b Department of Pharmacology, University College of Medical Sciences and GTB Hospital, New Delhi, India

^c Department of Psychiatry, University College of Medical Sciences and GTB Hospital, New Delhi, India

ARTICLE INFO ABSTRACT



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Introduction: Psychopharmacological drugs are used in the treatment of different types of psychotropic disorders. These drugs are associated with a variety of adverse drug reactions (ADRs). The ADRs due to psychopharmacological drugs are a significant cause of mortality and morbidity.

Objectives: The current study assessed the adverse drug reactions of psychopharmacological drugs in patients with psychiatric disorders.

Methods: This study was a retrospective study. All ADR forms related to psychopharmacological drugs that were reported to the pharmacovigilance center, UCMS, and GTB Hospital, between December 2019 to February 2020, were assessed to identify the incidence and nature of important ADRs. Causality assessment was done by WHO Uppsala Monitoring Centre Global Introspection Method. A total of 150 ADR forms were analyzed.

Results: Females (60.66 %) experienced more ADRs than males (39.33 %). ADRs were most commonly reported in the age group of 18-28 years followed by 29-39 years. Depression was the most common diagnosis in patients with psychiatric disorders. Dizziness was the most common ADR followed by headache and insomnia. Escitalopram (12.21 %) was the most commonly implicated drug causing ADRs followed by clonazepam (9.92 %). As per the WHO causality assessment method, 77 % of ADRs were possible and 23 % were probable.

Conclusions: Therefore, early detection and awareness of ADRs are important to enable health professionals to perform alterations in the prescribed drug treatment to prevent or reduce the adverse effects due to psychotropic drugs. This will improve patient care and safety as well as promote rational use of drugs.

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Introduction



* Corresponding Author

Rachna Gupta

E-mail: drachna1@rediffmail.com

Contact: +919868140063

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Psychopharmacological drugs are also known by various names such as "psychotherapeutic agents", "psychiatric medications", "psychotropic drugs", etc. These are the agents/drugs used in the treatment of different types of mental illnesses. The term "psychotropic" describes any drug that affects behavior, mood, thoughts, or perception. Although "psychotropic drugs" is an umbrella term for many different drugs, including prescription drugs and commonly misused drugs, here, it is only used to refer to prescription drugs. Psychotropic drugs are classified according to the ATC system and these are generally belonging only to one of five classes: antipsychotics, antidepressants, anxiolytics, hypnotics, and mood stabilizers (Caraci *et al.*, 2017).

Various psychological disorders have been identified including depression, bipolar disorder, dementia, anxiety, schizophrenia, and other psychoses. Depression is one of the most common causes of psychological disorders worldwide and women are more affected than men. Bipolar disorders typically consist of alternate periods of depression and mania. The common sign and symptoms of schizophrenia are auditory hallucinations, delusions, disorganized speech, social withdrawal, and cognitive impairment. Dementia is characterized by memory loss, lack of orientation, comprehension, poor learning capacity, and impaired judgment. Dementia is caused by a variety of diseases and injuries that affect the brain, such as Alzheimer's disease or stroke.

Antidepressants are medications that can relieve the symptoms of depression. Antidepressants are also used for other health conditions, such as anxiety, pain, and insomnia. Some antidepressants may cause more side effects than others. The most common side effects include sleepiness, nausea, vomiting, weight gain, diarrhea, and sexual problems. Anti-anxiety drugs such as benzodiazepines are commonly used in anxiety that produces effect more quickly than buspirone. The common side effects of benzodiazepines are drowsiness, headache, confusion, dizziness, nausea, blurred vision, and nightmares, etc.

Antipsychotic drugs are often used in combination with other drugs to treat Severe Depression, Eating Disorders, delirium, dementia, and mental health conditions including Attention-Deficit Hyperactivity Disorder (ADHD), Post-traumatic Stress Disorder, Obsessive-Compulsive Disorder, and Generalized Anxiety Disorder. Antipsychotics have many adverse events and risks including drowsiness, weight gain (the risk is higher with some atypical antipsychotic medicines), dizziness, restlessness, dry mouth, constipation, nausea, and vomiting. Studies have shown that the psychotropic drugs most ordinarily related to ADRs are SSRIs and atypical antipsychotics (Sarumathy *et al.*, 2014).

Patients with mental illnesses need long-term treatment with psychotropic drugs which can predispose them to a variety of ADRs (Kumar & Khosla *et al.*, 2018). According to World Health Organization, adverse drug reaction is defined as "any response to a drug which is noxious and unintended and which occurs at a dose normally used in man for prophylaxis, diagnosis or treatment of the diseases for the modification of the physiological function". Pharmacovigilance is synonymously called "monitoring of drug safety" as it comprises of science and activities relating to the collection, detection, assessment, monitoring and prevention of adverse effects and other drug-related problems (Dogra *et al.*, 2013).

In India, the Pharmacovigilance Programme of India (PvPI) was launched by the Government of India in July 2010 to create a nationwide system of safety reporting. It aims to strengthen the adverse drug reaction data in Indian Patients. Indian Pharmacopoeia Commission (IPC) acts as a National Coordinating Center for PvPI and works in close collaboration with the WHO-Uppsala Monitoring Centre contributing to the global ADR database. The NCC PvPI thereby helps the regulatory authority of India in taking safety decisions about pharmaceutical products.

Prevention or minimization of side effects should be an important part of the treatment plan, as the frequency and severity of side effects may play a role in the effectiveness and tolerability of the particular drug.

Monitoring of ADRs in psychiatry units can play a critical role in detecting ADRs and alerting physicians about the possibility and circumstances of such events, thereby protecting the patients from avoidable harm. These adverse effects tend to affect the physical well-being and mental health of the patient and could result in a patient's non-compliance to treatment.

In India, pharmacovigilance activities need reinforcements. Information is scarce about ADRs with psychotropic drugs (Sengupta *et al.*, 2011; Mishra *et al.*, 2013; Singh *et al.*, 2017). Therefore, this study was carried out between December 2019 to February 2020 to assess the adverse drug reactions of psychopharmacological drugs.

Methods

This study was a retrospective study. All ADR forms related to psychopharmacological drugs that were reported to the pharmacovigilance center, UCMS, and GTB hospital between December 2019 to February 2020 were assessed to identify the incidence and nature of ADRs. The forms were evaluated to obtain information on the patient's demographics, the spectrum of different ADR, psychotropic drugs associated with ADR, a different class of psychotropic drugs, type of underlying disorders in patients who experienced ADRs, and outcomes of

suspected ADRs. Causality assessment was performed using the WHO Uppsala Monitoring Centre (UMC) global introspection method.

Results

A total of 150 ADR forms related to psychopharmacological drugs were analyzed. A total of 131 suspected ADRs were reported. Demographic details and treatment variable-related variables of the patients who experienced adverse drug reactions are provided in **Table 1**.

On analysis, it was found that out of 150 ADRs form 91 (60.66 %) were female and 59 (39.33 %) were male patients. The maximum number of ADRs was documented in the age group of 18-28 years (32 %) followed by 29-39 years (23.33 %). The majority of the patients who experienced ADR were taking three to four drugs. Around 43 % of the patients experienced an average of 4-5 ADRs shown in **Table 1**.

Table1: Demographics Characteristics of the Patients Population

Number of patients		
Gender	Male	59
	Female	91
	Total	150
Age	<18	11
	18-28	48
	29-39	35
	40-49	24
	50-59	11
	>60	21
The prescribed number of drugs	1-2	27
	3-4	75
	>5	48

Dizziness was the commonest ADR noted in 16 (12.21 %) patients followed by headache 12 (9.16 %), insomnia 13 (9.92 %), Drowsiness, and Anxiety 10 (7.63 %) shown in **Figure 1**.

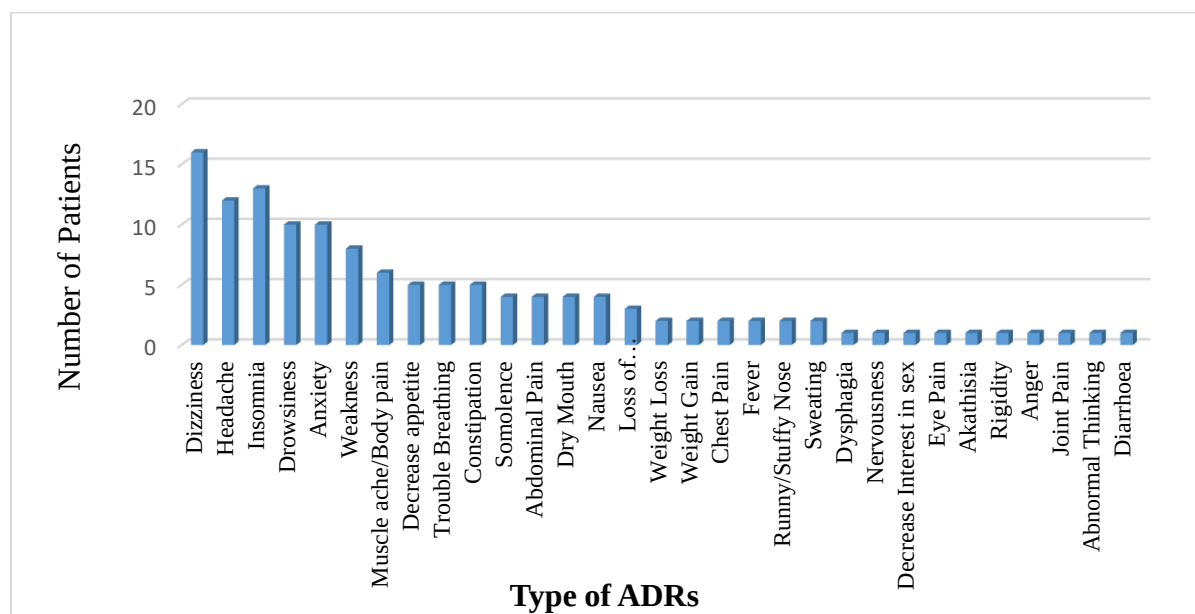


Figure1: Spectrum of different adverse drug reactions

Escitalopram 16 (12.21 %) was the most commonly implicated drug causing ADR followed by clonazepam and Mirtazapine 13 (9.92 %). Escitalopram and clonazepam were commonly prescribed drugs. Fluoxetine

and Escitalopram were the most common antidepressants used in obsessive-compulsive disorder. In bipolar affective disorder, Escitalopram was found to be the most commonly used antidepressant mentioned in **Figure 2**.

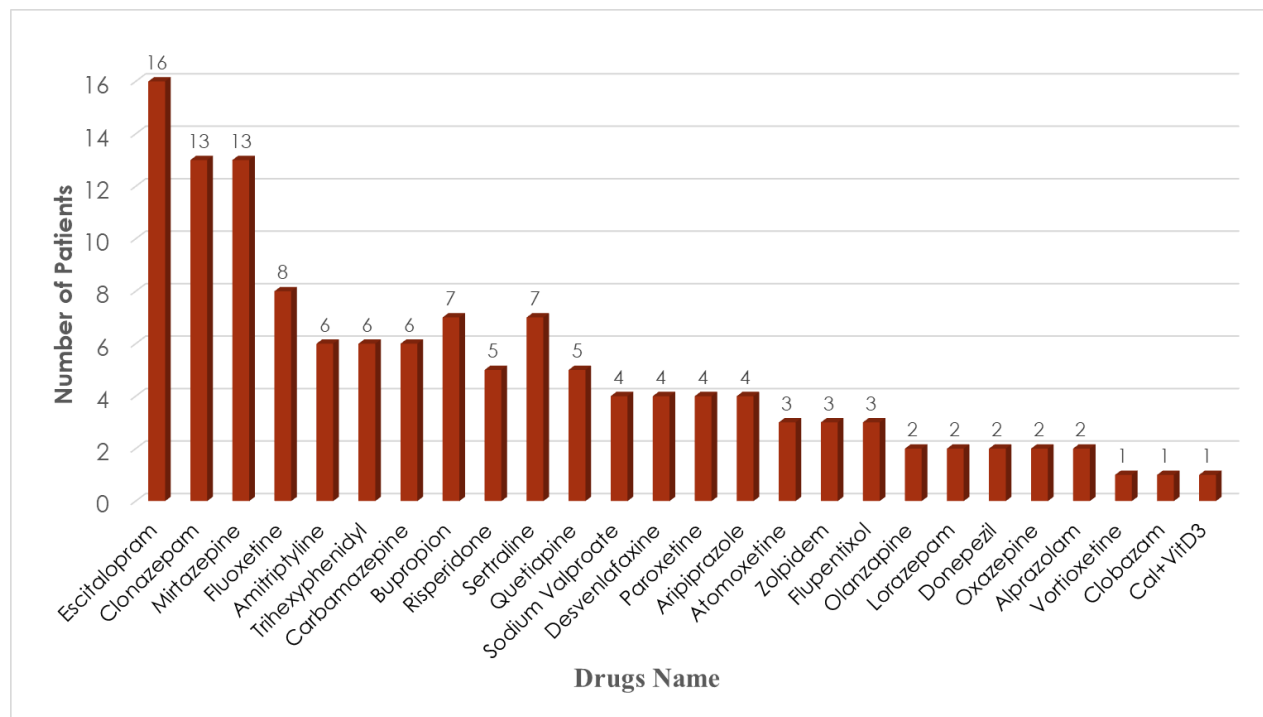


Figure 2: Psychotropic Drugs associated with adverse drug reactions

SSRI was the most common group across all the subtypes constituting more than half of the prescriptions. Selective serotonin reuptake inhibitor 43 (32.82 %) followed by atypical antipsychotics 21 (16.03 %) were the most commonly involved psychotropic medications involved in ADR. SSRIs with atypical antipsychotics were the most

common combination used in half of these cases. SSRIs with atypical antipsychotics, TCAs, mirtazapine and serotonin, and norepinephrine reuptake inhibitors (SNRIs) with mirtazapine were other combinations used mentioned in **Figure 3**.

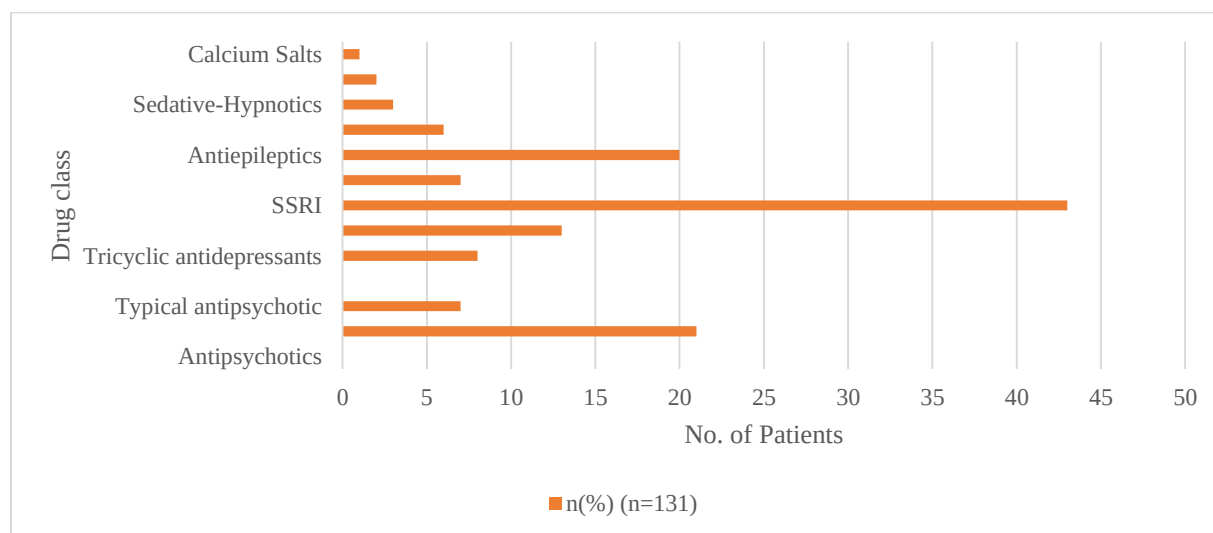


Figure 3: Different Class of Psychotropic Drugs Involved in adverse drug reactions

Depressive disorders were the most common diagnosis the patients using two antidepressants. Another diagnoses were obsessive-compulsive disorder. Depression 45

(34.35 %) was the most commonly diagnosed psychiatric condition in the patient who developed ADRs followed by

obsessive-compulsive disorder in 15 (11.45 %) cases. **Figure 4.**

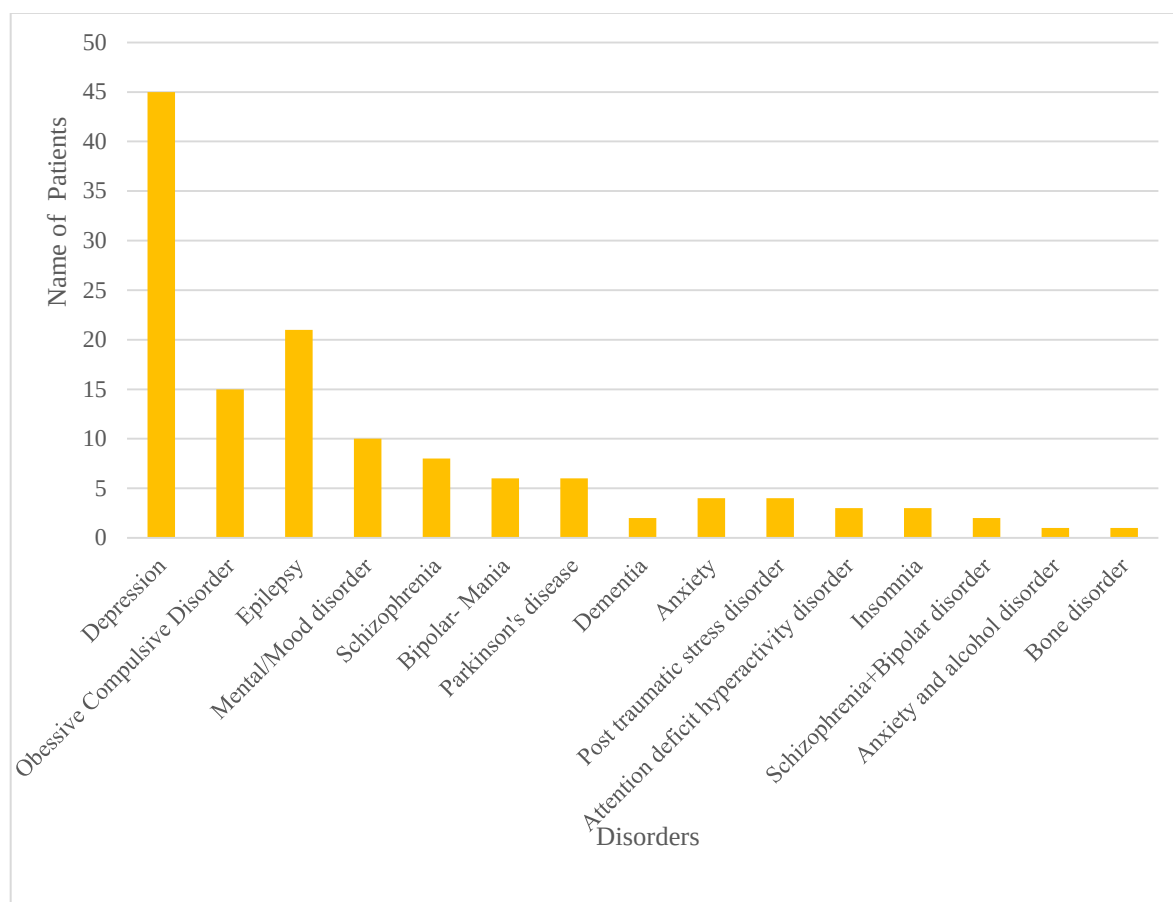


Figure 4: Type of underlying disorders in patients who experienced adverse drug reactions

When assessed by WHO Uppsala Monitoring Centre (UMC) Causality assessment scale, 34 (23 %) suspected ADRs were found to be probable and 116 (77 %) ones were found to have a 'possible' relation with the reported medication given in **Figure 5.**

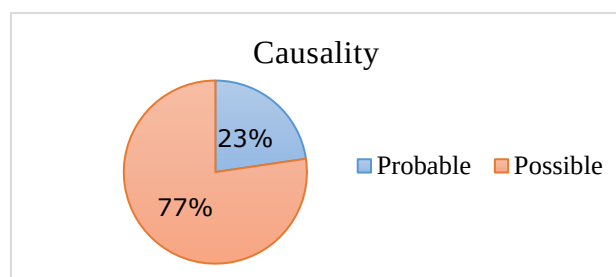


Figure 5: Causality assessment of suspected adverse drug reactions

Discussion

ADR reporting is considered an important part of post-marketing surveillance and drug safety. This study analyzed the adverse effects of psychopharmacological

drugs. The incidence of ADRs was found to be more in females (60.66 %) as compared to males (39 %). However, many international studies have reported an overall incidence rate of 5.01-21.5 % in psychiatry OPDs (European Medicines Agency, 2005; FDA & HHS, *et al.*, 2009). In our study, dizziness, headache, and insomnia were documented as the most common ADRs. A study by Singh *et al.* 2017 reported weight gain, sedation, and insomnia as the most frequent ADRs among psychiatric patients. Another study by Sharma *et al.* 2014 observed somnolence, weight gain, and akathisia as common ADRs caused by psychopharmacological drugs. While analyzing different classes of drugs, we found that anti-depressants were responsible for the maximum number of ADRs in our study. This observation aligns with the findings reported by previous studies (Singh *et al.*, 2017). Among anti-depressants, the majority of ADRs were caused by SSRIs mainly Escitalopram, as it was the first choice among SSRIs (Au *et al.*, 2010). SSRIs were followed by atypical antipsychotics, antiepileptic drugs. An additional 2.2 percent of other drugs like sedatives and hypnotics also caused ADRs but with much lower frequency. Some

of these ADRs included poor sleep, appetite disturbances, dizziness, headache, and weakness during the medication course. In the present study, we identified escitalopram, clonazepam, and mirtazapine as common drugs causing ADRs.

Conclusions

Pharmacovigilance in psychiatry is essential. Awareness and early detection of ADRs can help clinicians make speedy decisions regarding the alteration of drugs prescribed or the addition of newer drugs with less adverse effects to reduce the symptoms of ADRs and to improve patient care and compliance.

Conflict of Interest

The author has no conflict of interest.

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