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A Clinical Audit of Psychotropic Drug Use in a Nigerian Teaching Hospital

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ABSTRACT

Background and Objective: Antipsychotics use has provoked increasing concern due to their associated adverse drug reactions. The irrational use of medicines is another factor that may contribute to the adverse effects of drugs. The objective of this study is to investigate self-reported adverse effects and drug use evaluation of antipsychotics in the Department of Psychiatry, Usmanu Danfodiyo University Teaching Hospital, Sokoto. **Materials and Methods:** A 6-year cross-sectional retrospective descriptive study, involving case records of all patients diagnosed with a psychiatric disorder and received psychotropic medications. Data were extracted and analyzed. Results were presented as the Mean+SD for age, the Median+SD for total drug use and percentages for qualitative variables. The χ^2 was used to determine factors associated with ADRs with a p-value of 0.05. **Results:** About 1266 files were included, with a mean age of 33.09±12.89 years. About 31.6% of the patients had reported at least one adverse effect, excessive salivation (13.5%) was most frequent. Benzhexol was the most (27.0%) prescribed medication. The average amount of medication used in each encounter was 3.2 (SD = 0.82). The percentage of medicines prescribed by their generic names was 73.1%. The percentage of encounters with an antibiotic prescribed was less than 30 and 2% of drugs were given via the injection route. Prescribing from an Essential Drug List (EDL) or some other formulary is not usual in this setting. **Conclusion:** There was a high prevalence of adverse effects. Adherence to the WHO/INRUD core prescribing indicators was not optimal. The National Institute of Clinical Excellence (NICE) guideline was not strictly adhered to in managing patients in this study.

KEYWORDS

Drug-related adverse reactions, antipsychotics, psychotropic drugs, tertiary healthcare, psychiatric disorder, drug evaluation

INTRODUCTION

Antipsychotic medications are used to alleviate psychotic symptoms, however, concerns have arisen due to their Adverse Drug Reactions (ADRs), which have significant implications on the patient's life, family lifestyle, financial status and therapy adherence[1,2]. Commonly observed ADRs were psychic, autonomic,

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extrapyramidal and hormonal effects, leading to physical morbidity, stigma, decreased quality of life and, in severe cases, death[3,4]. Antipsychotics, mood stabilizers and antidepressants were the most commonly prescribed psychotropic drugs[5]. Dry mouth, sedation, extrapyramidal symptoms and tardive dyskinesia are side effects of first-generation antipsychotics (FGAs). To mitigate these effects, second-generation antipsychotics (SGAs) were introduced, however, they also cause ADRs such as dyslipidemia, weight gain, metabolic syndrome and diabetes mellitus[6].

The World Health Organization (WHO) defines ADRs as harmful, unintended, hazardous, or fatal reactions to medicines at dosages used in humans for prevention, diagnosis, or therapy[7]. Identifying, documenting and preventing them is crucial for patient safety and medication compliance[8-10]. Studies have shown that ADR incidence ranges from 5-35% among outpatients, accounting for 0.7% of total admissions, of which 1.8% resulted in death[11,12]. Common ADRs reported include somnolence, weight gain, akathisia and drug-induced restless leg syndrome (RLS)[13].

Most psychiatric diseases require long-term or lifelong care, increasing the risk of severe ADRs and lowering patient compliance[14]. Studies have shown that 42.4% of patients discontinue psychiatric medications within 30 days due to specific side effects[15]. The well-known AMSP (Arzneimittelsicherheit in der Psychiatrie) study found that 1.5% of psychiatric inpatients experienced severe ADRs[16]. Another study reported an ADR incidence of 20.36%[5]. Patients may discontinue the use of an effective medicine due to side effects and switch to less effective but more tolerable alternatives[17]. While antipsychotics can increase the risk for metabolic events with prolonged use, current evidence shows a favorable risk-to-benefit ratio[18]. Compliance remains a significant challenge as ADRs play a substantial role in medication discontinuation and poor adherence among those with severe mental illness[19]. Newer, third-generation antipsychotics (TGAs), offer a better safety profile than SGAs[20].

Healthcare professionals sometimes underestimate the potential risks while exaggerating the advantages of prescription medications[21]. It's worth noting that a considerable number of patients do encounter experience ADRs and there have been documented cases of fatalities linked to them[22-26]. However, systematic methods for identifying potential ADRs are not widely utilized and there is no consensus on the best techniques for doing so[27,28]. To affectively tackle ADRs, it's crucial to adopt comprehensive, multi-professional approaches[29]. The under-reporting of ADRs have been observed in reporting systems like German Spontaneous Reporting System (SRS) and the British Spontaneous Reporting Program[14,30]. Studies have shown that a substantial numberof clinicians do not diagnose or report ADRs due to various reasons, such as lack of time, forgetfulness and underestimation of the significance of the reaction[31,32].

According to reports, ADRs due to antipsychotic medications might be fatal or crippling and are often due to poor monitoring and dose-related[33,34]. Improper medication usage also contributes to ADRs. The WHO and the International Network for Rational Use of Drugs (INRUD) have developed indicators to evaluate drug use trends[35]. Understanding ADR profile in psychiatric patients is pertinent for their management, but published reports on this subject are scarce in Nigeria, thus, a cross-sectional retrospective descriptive study was conducted to investigate:

- The ADRs and drug use profile of antipsychotic drugs
- Drug use evaluation to assess the prescribing practices of physicians
- Clinical audit to assess whether or not the practice in the Department of psychiatry at Usmanu Danfodiyo University Teaching Hospital Sokoto is in line with standard reference guidelines among psychiatric patients

MATERIALS AND METHODS

This is a 6-year cross-sectional retrospective descriptive study of case records from the outpatient clinic of the psychiatric Department of Usmanu Danfodiyo University Teaching Hospital, Sokoto (UDUTH,

Sokoto). The study was carried out from July, 2022 to December, 2022. Throughout the study period, 1266 patient files (both old and new) who visited the outpatient psychiatry clinic were identified as having a psychiatric disorder and were treated with psychotropic medications (antidepressants, antipsychotics, or mood stabilizers) were included. Files containing blank or incomplete notes were excluded. A data collection sheet (proforma) was used for the data extraction, which included age, sex, religion, occupational status, marital status, tribe, diagnosis, duration of illness, duration of treatment, medications, the total daily dose of medication, class of antipsychotic, number of antipsychotic and documented self-reported adverse drug reactions. The standard World Health Organization/International Network for Rational Use of Drugs prescribing indicators (WHO/INRUD) were used to determine physicians' prescribing practices. WHO and the International Network for Rational Use of Drugs (INRUD) have developed drug-prescribing indicators to measure prescribing performance in primary care[35]. The data were extracted by resident doctors in the department. All ethical and professional considerations were followed throughout the study to keep patient data strictly confidential.

Ethical consideration: Ethical clearance was obtained from the Ethical Committee of the Institution. Ethical standards were strictly observed in line with international standards and protocols.

Statistical analysis: Data were entered into excel and later transferred to SPSS version 24 for analysis. Mean and standard deviation were calculated for age and the median and the standard deviation were calculated for total drug dosage used in 24 hrs. Frequency and percentage were reported for qualitative variables. The Chi-square Test was used to determine factors associated with ADRs. A significant level was set at 0.05.

RESULTS

Data were extracted from 1266 files. Files with missing or uncompleted notes were excluded at the beginning of data extraction. Of the 1266 patients, 50.6% (n = 640) and 49.5% (n = 626) were male and female, respectively. The mean age of the patients was 33.09±12.89 (range, 17-81). The majority were Muslims (90.5%), 38.7% were employed, 83.6% were Hausa/Fulani and 57.6% were married, as shown in Table 1.

The data obtained on the distribution of ADRs reported by patients shows that about one-third, n = 402 (31.7%), of the patients reported experiencing at least one ADR. The prevalent ADR was excessive salivation, n = 166 (13.5%), followed by weight gain, n = 87 (6.9%), excessive sleep, n = 84 (6.6%), restlessness, n = 82 (6.5%), hand tremor, n = 70 (5.5%), neck stiffness, n = 61 (4.8), slurred speech, n = 56 (4.4%) and tongue protrusion, n = 40 (3.2%). Among males, poor erection was prevalent, n = 74 (11.5%). Among the least reported ADRs were anemia, urinary retention, hyperglycemia, gynecomastia and body pain which were within the range of 0.1-0.4% each as shown in Table 2.

The prevalent drug prescribed among the patients was Benzhexol, n = 342 (27.0%), followed by Amitriptyline, n = 294 (23.2%), Carbamazepine, n = 245 (19.4%), Chlorpromazine, n = 238 (18.8%), Risperidone, n = 98 (7.7), Haloperidol, n = 90 (7.1%), Risperdal, n = 66 (5.2%), Propranolol, n = 100 (7.9%), Trifluoperazine, n = 90 (7.1%) and Sodium Valproate, n = 61 (4.8%) as shown in Table 3.

The distribution of psychotropic drugs used among patients reveals that a significant proportion of patients were prescribed antipsychotic medications 56.0%, with 41.3% receiving first generation antipsychotics and 14.7% receiving second generation antipsychotics. Antidepressants were also widely prescribed, accounting for 37.1% of the cases. Additionally, a notable percentage of patients received anticholinergics (27.0%) and antimanic/antiepileptic drugs and benzodiazepines were received by 27.0, 25.2 and 5.1%, respectively. A small percentage, 6.9%, received long-acting injectable antipsychotics.

Table 1: Socio-demographic factors of the patients

Socio-demographic and clinical factors	Frequency (%)
Age	
15-25	435 (34.4)
26-36	402 (31.7)
37-47	244 (19.3)
48-58	116 (9.2)
59-69	54 (4.3)
≥70	16 (1.3)
Sex	
Male	640 (50.6)
Female	626 (49.5)
Religion	
Muslim	1146 (90.5)
Christian	120 (9.5)
Occupation	
Employed	490 (38.7)
Unemployed/students	776 (61.3)
Tribe	
Hausa/Fulani	1058 (83.6)
Yoruba	62 (4.9)
Igbo	42 (3.3)
Others	104 (8.2)
Marital status	
Married	729 (57.6)
Single	504 (39.8)
Divorce	11 (0.9)
Separated	2 (0.2)
Widow	20 (1.6)
Duration of illness (months)	Median = 24.0
Duration of treatment (months)	Median = 16.0

Table 2: Types of adverse drugs reactions on patients

Adverse Drug Reactions (ADRs)	Frequency (%)
Akathisia/restlessness	82 (6.5)
Anemia	1 (0.1)
Body pain	3 (0.2)
Body weakness	36 (2.8)
Constipation	5 (0.4)
Diarrhea	51 (4.0)
Dizziness	17 (1.3)
Dry mouth	36 (2.8)
Poor sleep	24 (1.9)
Fall	20 (1.6)
Gynecomastia	3 (0.2)
Hand tremors	70 (5.5)
Hyperthyroidism	3 (0.2)
Hyperglycemia	3 (0.2)
Excessive salivation	166 (13.1)
Irritability	1 (0.1)
Nausea	9 (0.7)
Neck stiffness	61 (4.8)
Poor erection	74 (11.5)
Excessive sleep	84 (6.6)
Rashes	15 (1.2)
Slurred speech	56 (4.4)
Steven johnson syndrome	3 (0.2)
Tongue protrusion	40 (3.2)
Urinary retention	3 (0.2)
Weight gain	87 (6.9)

Table 3: Profiles of psychotropics and other drugs among the patients

Drugs prescribed	Frequency (%)
Amitriptyline	294 (23.2)
Artane	202 (15.9)
Augmentin	2 (0.2)
Benzhexol	342 (27.0)
Carbamazepine	245 (19.4)
Chlorpromazine	238 (18.8)
Cognitol	24 (1.9)
Depixol	8 (0.6)
Diazepam	63 (4.9)
Donepezil	24 (1.9)
Epilim	11 (0.9)
Escitalopram	12 (0.9)
Fluoxetine	25 (1.9)
Flupenthixol	15 (1.9)
Fluphenazine	64 (5.1)
Flutex	12 (0.9)
Gabapentin	2 (0.2)
Haldol	91 (7.2)
Haloperidol	90 (7.1)
Imipramine	33 (2.6)
Inderal	23 (1.8)
Lexotan	2 (0.2)
Lorazepam	4 (0.3)
Metoclopramide	7 (0.6)
Neurovite	12 (0.9)
Olanzapine	22 (1.7)
Omeprazole	2 (0.2)
Paroxetine	2 (0.2)
Propranolol	100 (7.9)
Risperdal	66 (5.2)
Risperidone	98 (7.7)
Sertraline	51 (4.0)
Sodium Valproate	61 (4.8)
Stellazine	14 (1.1)
Tofranil	8 (0.6)
Trifluoperazine	90 (7.1)
Triptyzol	33 (2.6)

Table 4: World Health Organization/International Network for Rational Use of Drugs prescribing indicators

Indicators (n = 2, 126)	Value	Optimum
Average number of drugs per encounter (Mean±SD)	3.21±0.82	≤3
Drugs by generic name (%)	73.10%	100%
Encounters with antibiotics (%)	Less than 30%	≤30%
Encounters with injection (%)	2.00%	≤10%
Drugs from EDL (%)	Less than 100%	100%

Drugs were used on average 3.2 times per encounter (SD = 0.82). About 73.1% of medications were prescribed under their generic names. Less than 30% of patient interactions required an antibiotic prescription and just 2% of medications were administered through injection. Prescribing from EDL or some other formulary is not usual in this setting (Table 4).

Table 5 below presents the list of psychiatric disorders diagnosed among the patients. Schizophrenia had the highest occurrence at 22.2%, followed by generalized anxiety disorder at 18.3%, depressive disorder at 17.2% and mixed anxiety depressive disorder at 9.5%. Other reported conditions had lower frequencies, ranging from 0.1 to 7.7%.

Table 5: List of Psychiatric disorders among the patients

Diagnosis	Frequency (%)
Agoraphobia	8 (0.6)
Attention deficit hyperkinetic disorder	10 (0.8)
Bipolar affective disorder	59 (4.7)
Dementia	4 (0.3)
Depressive disorder	218 (17.2)
Enuresis	4 (0.3)
Generalized anxiety disorder	232 (18.3)
Migraine	4 (0.3)
Mixed anxiety depressive disorder	120 (9.5)
Obsessive-compulsive disorder	21 (1.7)
Panic disorder	10 (0.8)
Parkinsonism	2 (0.1)
Personality disorders	10 (0.8)
Post-traumatic stress disorder	22 (1.7)
Schizophrenia	281 (22.2)
Seizure disorder	98 (7.7)
Sleep disorder	54 (4.2)
Substance use disorder	92 (7.3)
Suicidal attempt	17 (1.3)

DISCUSSION

The prevalent ADR was excessive salivation, followed by weight gain, excessive sleep and restlessness while the least reported ADRs were anemia, urinary retention, hyperglycemia, gynecomastia and body pain which were within the range of 0.1-0.4% each. The management of psychiatric patients requires a long duration of medication adherence, thus, ADRs are a significant determinant of successful patient treatment to prevent relapse[5]. The ADR prevalence in this study was 31.6%, similar to a survey conducted in India[36]. This contradicted a lower prevalence reported in another previous study in India[37]. The higher prevalence in this study could be due to the prevalent lower age group among the patient's study. Slurred speech and a protruding tongue are comparable to those in a Brazilian study[38]. According to research by Shah *et al*.[39], where drowsiness and constipation were the most common Adverse Drug Reactions (ADRs), most psychiatric medications influence central nervous system parameters.

The most prescribed psychiatric medications in the hospital were Benzhexol, Amitriptyline, Carbamazepine, Chlorpromazine, Haloperidol, Risperidone, Propranolol and Trifluoperazine. This conclusion was consistent with the research done by Sengupta *et al*.[37]. The higher prevalence of ADRs in this study may be due to the fact that chlorpromazine has been linked to increased cases of tremors, dry mouth, slurred speech and excessive sleep[40].

Only two of the five WHO/INRUD prescribing factors were optimal in this study. The average number of medications prescribed per contact was more than 3, fewer than 100% of the medications were prescribed by their generic names and prescribing from the EDL or another formulary is rare. Worldwide, erratic prescribing habits result in unfavorable patient outcomes[41]. The prescribing practice and appropriate use of drugs were not at their best in this study and the reported adverse reactions were high.

The findings above will be disseminated to the health facilities via feedback mechanisms such as publications and presentations with the aim of improving the performance of healthcare providers in several key dimensions related to the appropriate use of medications, providing a quantitative basis for quality improvement. This study's finding prompts a recommendation that there is a need for active and regular screening of all patients on psychotropic drugs for ADRs. This will guarantee qualitative documentation in a standardized manner to allow accessible data collection and retrieval for more in-depth analyses. Additionally, there is a need for the managing physicians to prescribe more SGAs as recommended by NICE guidelines. This would probably reduce the prevalence of ADRs among patients.

The ADRs were self-reported by the patients, being a retrospective study, current ADRs experienced by the patients could not be documented. There are few pieces of literature, thus, comparing findings in previous studies was limited. However, this study gives a robust indication of what is happening in the hospital's psychiatry department. It may precipitate another clinical Department in the hospital to begin a clinical audit.

CONCLUSION AND RECOMMENDATIONS

There was a high prevalence of ADRs among the patients. The commonly reported ADRs were excessive salivation, weight gain, excessive sleep, restlessness, hand tremor, neck stiffness, slurred speech and tongue protrusion. Despite the availability of second-generation and the introduction of third-generation antipsychotics, first-generation antipsychotics (Haloperidol, Chlorpromazine and Trifluoperazine) remain the prevalent antipsychotics among patients. There was no complete compliance with WHO/INRUD prescribing indicators. Furthermore, the International Guideline of the National Institute of Clinical Excellence (NICE) was not strictly adhered to in the management of patients in this setting. This study offers a representative idea of the hospital's ADRs and drug use profile of psychotropic drugs.

SIGNIFICANCE STATEMENT

The study investigates the self-reported adverse effects and drug use evaluation of antipsychotics. It was found that adverse effects were prevalent and adherence to the WHO/INRUD core prescribing indicators was not optimal. These findings are critical to improved patient care. Feedback on the findings should be transmitted to the health facility for improved services.

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