

Prescribing Pattern of Antipsychotic Medicines Among Physicians in Federal Medical Centre, Lokoja, North Central Nigeria

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Abstract

Background: Psychosis is a symptom of several mental disorders characterized by an impaired relationship with reality which has been found to be on the increase in prevalence across the globe in recent times.

Objective: The objective of this study was to assess the prescribing pattern of antipsychotics by physicians in the Federal Medical Centre, Lokoja, Kogi State and describe the rational prescribing of antipsychotics among the physicians.

Methodology: The research design was a descriptive retrospective study assessing the pattern of antipsychotics prescribed by physicians in the Federal Medical Centre, Lokoja. Data were collected from copies of prescription sheets containing antipsychotics from 1st January, 2016 to 31st December, 2016. The data were analyzed using SPSS version 20. Chi square test was used to determine relationships between categorical variables and p-value < 0.05 was considered significant.

Results: A total of 1101 prescription sheets containing 1401 prescribed antipsychotics were obtained and analyzed. The most frequently prescribed antipsychotic was olanzapine (23.6%) closely followed by risperidone (20.7%) while aripiprazole was the least frequently prescribed (0.3%). About ninety-one percent (91.2%) of the medicines were prescribed in their generic form and 50.4% of the prescriptions were in line with treatment guidelines in selection and combination. The average number of drugs per prescription was 2.17 while average number of antipsychotics contained per prescription was 1.3. About half (52.5%) of antipsychotics were available at the pharmacy while 47.5% were out of stock.

Conclusion: Olanzapine was the most prescribed antipsychotic in the facility. Prescriptions with inappropriate doses and use of injectable drugs were not majorly observed in the study.

Keywords: Antipsychotics, prescribing patterns.

Introduction

Schizophrenia or psychosis is defined as a chronic disabling mental illness with far-reaching consequences on social, interpersonal and occupational functioning in affected individuals [1]. It significantly contributes to the global burden of disease. Antipsychotic medications, which are the mainstay of treatment, yield modest outcomes as they improve positive symptoms but are less effective on negative and cognitive symptoms [1]. The hallmark of psychiatric disorders is characterized by hallucinations which is a state of hearing, seeing or feeling things that are not there; and delusions which is a state of fixed false beliefs or suspicions that are firmly held even when there is evidence to the contrary. The disorder can make it difficult for the affected people to work or study normally [2]. The World Health Organization (WHO) estimated the prevalence of schizophrenia/psychotic disorders to be about 20 million worldwide [3]. Across Africa, a lifetime prevalence of 0.1 % to 1.83% has been estimated [4]. In Nigeria, strategic framework aiming at addressing mental health problems is not adequate in providing effective prevention and control of such illness with improved access to mental health care [5]. Clinical profile and socioeconomic status have been seen to determine the choice of antipsychotic drugs prescribed by physicians [6].

Major challenges in the treatment of mental disorders include poor facilities, lack of infrastructure, obsolete mental health laws, dearth of manpower and, most importantly, high cost of treatment. The burden of treatment is on the increase for a population of about 170 million people [7]. It is speculated that 64 million Nigerians suffer from one form of mental illness or the other [8]. The use of antipsychotics is on the increase and their prescriptions by psychiatrists and other physicians should be in accordance with the recommended guidelines to achieve optimal benefits to the patient with minimal side effects at lowest possible costs to the patient and the community. The cost of treatment of mental disorders is a major factor in determining therapeutic outcomes as the prevalence of mental illness in Nigeria is linked to socio-economic factors [9].

Objective

The objective of this study was to assess the prescribing pattern of antipsychotic medicines among physicians in Federal Medical Centre, Lokoja, through the review of prescriptions and assessment of rational prescribing of the drugs.

Methodology

This study was conducted at Federal Medical Centre, Lokoja, Nigeria. This was a descriptive retrospective study of the pattern of antipsychotics prescribing at the facility between the months of January through December, 2016. The sample size was determined using WHO guideline for prescribing indicators in drug utilization studies [10], with calculation done using the formulae:

$$n = \frac{1.96^2 \sigma}{W^2}$$

where n = number of patients required, σ = standard deviation and W = level of precision. $\sigma=13.5$, $W^2=0.05$.

The value of n obtained was 1101 with 5% attrition rate inclusive. A systematic random sampling of the prescriptions was done by selecting one in every three prescriptions until a total of 1101 prescriptions from patients' case notes was obtained. Data were collected using a structured observational check list for prescribing indicators through the use of a data collection sheet that was developed to extract information on patient demographics, types of drug, dosage and frequency of administration and drug classes.

All prescription sheets containing antipsychotic drugs were collected from the Pharmacy department. Five research assistants were recruited and trained on data collection modalities. Data were extracted from the data collection sheet using Excel spread sheet and then filtered for analysis. Information collected included drug prescribed in generic or trade name, dosage of drug, availability of the drugs at the time the prescription sheet was presented to the pharmacy and categories of patients receiving the drugs.

Ethical Consideration

Permission to carry out the study was obtained from the hospital pharmacy department and confidentiality of the patients was maintained. Patient's identifiers like name and hospital number were not included in the information extracted from the drug order forms/ prescription sheets.

Statistical Analysis

The standard World Health Organization/International Network for Rational Use of Drugs prescribing indicators were used to determine the prescribing practices of physicians. The data obtained were analyzed using Statistical Product and Service Solutions (SPSS) version 20. Numerical and continuous variables were analyzed and presented as frequency tables and percentages. Chi square was used to

determine association between categorical variables. P-value < 0.05 was considered to be statistically significant.

Results

Types of antipsychotics prescribed in a total of 1,101 prescription sheets containing 1,401 antipsychotics were obtained. From this, 776 (55.3%) were typical antipsychotics while the remaining 625 (44.7%) were atypical antipsychotics. A total of 1,140 (81.4%) of the antipsychotics prescribed were oral tablets while 261 (18.6%) were injectables. The most frequently prescribed antipsychotic drug was Olanzapine (331; 23.6%) followed closely by Risperidone (290; 20.7%) as shown in Table 1. Aripiprazole was the least frequently prescribed antipsychotic drug (4; 0.3%). Close to half of the antipsychotics were prescribed between September and December (612; 43.7%).

Table 1. Details of Antipsychotics prescribed at Inpatient and Outpatients departments of Federal Medical Centre (2016).

Class	Medication	Inpatient			Outpatient			Total (%)
		Jan-Apr	May-Aug	Sept-Dec	Jan-Apr	May-Aug	Sept-Dec	
Atypical Oral	Aripiprazole	0	0	0	0	0	4	4 (0.3)
	Olanzapine	44	53	79	40	9	106	331 (23.6)
	Risperidone	35	40	22	44	57	93	290 (20.7)
Typical Oral	Chlorpromazine	31	9	26	13	26	53	158 (11.3)
	Trifluoperazine	48	13	31	18	53	57	220 (15.7)
	Haloperidol	44	9	13	26	18	26	137 (9.8)
Injectables	Fluphenazine	4	18	13	22	4	53	115 (8.2)
	Flupenthixol	13	9	4	35	22	13	98 (7.0)
	Chlorprozine	0	4	9	0	13	4	31 (2.2)
	Haloperidol	9	4	4	0	0	0	17 (1.2)

Prevalence of generic prescription among the physicians

The frequency of prescribing in branded or generic antipsychotic medicines within the period of study showed that the majority of the antipsychotics (1278; 91.2%) were prescribed using their generic names. The brand names of antipsychotics prescribed were largactil® (chlorpromazine), stellazine® (trifluoperazine), Haldol® (haloperidol), Rexolan® (olanzapine), modcate® (fluphenazine) and fluanxol® (flupenthixol) (See Table 2).

Table 2. Level of generic prescribing of antipsychotics (n = 1401)

Antipsychotics	Branded (%)	Generic (%)
Chlorpromazine	8(4.2)	181(95.8)
Trifluoperazine	35(15.9)	185(84.1)
Haloperidol	4(2.6)	150(97.4)
Aripiprazole	0(0.0)	4(100)
Olanzapine	27(8.2)	304(91.8)
Risperidone	0(0.0)	290(100)
Fluphenazine	49(42.6)	66(57.4)
Flupenthixol	0(0.0)	98(100)
Total	123(8.8)	1278 (91.2)

Adherence to Guidelines for Prescribing of Antipsychotic

Out of 1,101 prescription sheets obtained containing antipsychotics, 555(50.4%) of the prescriptions were strictly

in line with treatment guidelines [10] in the selection and combination of the antipsychotics for the patients while the remaining (546; 49.6%) were not. The prescription doses were within permissible range according to official reference books [7], without any cases of under-doses or over-doses. The proportion of prescriptions containing antipsychotic combinations were 282 (25.6%) while single drug prescriptions were 819 (74.4%). The average number of antipsychotics per prescription was 1.3.

Figure 1 indicates the number of drugs per prescription. The highest number of drugs per prescription was found to be eight (8) with this translating to 0.4% of the total number of prescriptions reviewed in the study. A large percentage of the prescriptions had 2 drugs only (Figure 1).

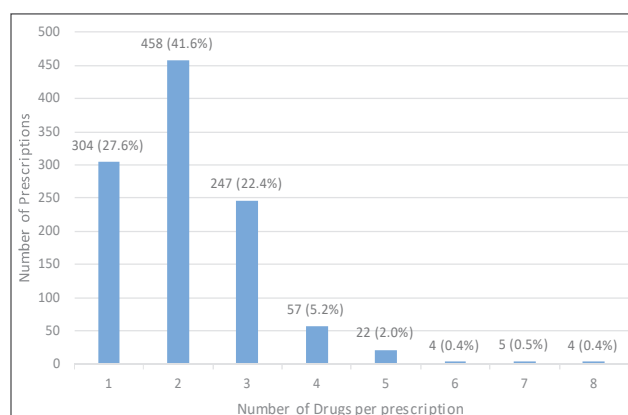


Figure 1. The number of drugs per prescription with antipsychotics (n= 1,101)

Combinations of Antipsychotics Prescription Pattern

Different combinations of antipsychotics based on different chemical classes and dosage forms are presented in Table 3. There were 15 different types of combinations observed. The co-prescription of chlorpromazine and trifluoperazine had the highest frequency of 67(23.6%) while combination of olanzapine and injectable fluphenazine had the least frequency of 3 (1.1%).

Table 3. Combinations of antipsychotics in prescriptions with more than one antipsychotic drug (n=282)

Combination type	Frequency (%)
Olanzapine + Chlorpromazine	17 (6.2)
Olanzapine + Haloperidol	5 (1.7)
Olanzapine + IM Flupenthixol	13 (4.5)
Olanzapine + IM Fluphenazine	3 (1.1)
Olanzapine + Chlorpromazine + IM Fluphenazine	5 (1.7)
Risperidone + Chlorpromazine	11 (3.9)
Risperidone + IM Flupenthixol	11 (3.9)
Risperidone + IM Fluphenazine	39 (14.0)
Aripiprazole + Chlorpromazine	5 (1.7)
Chlorpromazine + Trifluoperazine	67 (23.6)
Chlorpromazine + IM Fluphenazine	13 (4.5)
Chlorpromazine + IM Fluphenazine + Trifluoperazine	11 (3.9)
Trifluoperazine + IM Fluphenazine	30 (10.7)
Trifluoperazine + IM Flupenthixol	30 (10.7)
Haloperidol + IM Fluphenazine	22 (7.9)
Total	282 (100)

When association between types of antipsychotics and level of generic prescribing was assessed using chi square test, there was no relationship obtained from the categorical variables ($X^2 = 0.003$, p-value=0.6963).

Antipsychotic Availability in the Hospital Pharmacy

The proportion of antipsychotics available in the pharmacy department was 52.5% while 47.5% of antipsychotics were out of stock. There were more out of stock between January and April than other periods. When association between types of antipsychotics and the formulation type prescribed was assessed, a significant relationship ($X^2 = 31.64$, $p < 0.001$) was obtained with a noticeable higher combination of typical and atypical (69%) among patients taking oral with injection antipsychotics compared with less (37%) number of patients taking only typical antipsychotics. More of the typical antipsychotic only combinations were also oral plus injectable (107; 62.6%).

Discussion

On the class of antipsychotics prescribed, the percentage of typical antipsychotic drugs was 55.3% while that of atypical antipsychotic drugs was 44.7%. The reference value by the WHO for drug prescribed from the essential drug list was 100%. It was observed that the newer antipsychotics (atypical) were not in the current essential drugs list (the 5th revision of the national EDL). This could have contributed to this lower value of 44.7% of prescription encountered in the institution.

The treatment of diseases by the use of essential drugs prescribed by their generic names has been emphasized by the World Health Organization. Generic prescribing was found to be highly prevalent in this study (91.2%) which was in line with the WHO recommendation although it is worth mentioning that the facility could still be improved upon to comply with the WHO standard of 100%. Similar values for generic prescribing have also been reported in psychiatric facilities in some other studies [9]. The WHO essential drugs program recommends the use of generic prescribing to save cost and enhance access to essential medicines [11]. Though prescribers may use brand names, they accept generic substitution when a different brand was dispensed. It has become conventional that prescribers were used to old popular brand names of some of these medications, for example Stellazine® in the case of Trifluoperazine [12].

The association between the types of antipsychotic combinations by class and combinations by dosage form was found to be statistically significant. Combinations of parenteral and oral dosage forms were more common in the institution than combinations of two or more oral dosage forms of the antipsychotic drugs in order to reduce or prevent non-adherence or relapse cases. Justifiable reasons for prescriptions with antipsychotic combinations as recorded in this study (75.6%) included utilization of a different route of administration which exploits different pharmacodynamics or pharmacokinetic drug-drug interactions hoping to augment the efficacy of the

antipsychotics, especially after insufficient response [13]. However, concerns may include increased acute or long term side effects, anticipated (or uncomplicated) drug-drug interactions, increased non-compliance caused by increased complexity of drug regimen, difficulty in determining causes and effects of multiple treatments and substantially higher costs [14].

The assessment of a mental health system by the WHO-Assessment Instrument for Mental Health Systems (WHO-AIMS) tool in Nigeria reported that though a list of essential medicines existed, it was not always available at the health centers [15]. The typical antipsychotic drugs (55.3%) were more frequently prescribed compared to the atypical antipsychotic drugs (44.7%). This is contrary to results obtained from Federal Neuropsychiatric Hospital in Aro, South Western Nigeria where 55% of prescribed antipsychotic medications were mostly atypical antipsychotics [16] as against the typical in this study.

The frequent use of the atypical antipsychotics was very encouraging with risperidone (20.7%) and olanzapine (23.6%) being more prescribed than any other antipsychotic medications. Atypical antipsychotics have been recommended as first choice in the treatment of schizophrenia and some other psychiatric disorders because of their better efficacy against refractory cases and fewer adverse effects [17]. The atypical antipsychotic drugs are more expensive but their use is correlated with enhanced concordance and lower hospitalization rates [18]. Extrapyramidal side effects (EPS) are more common with the typical antipsychotics which were more frequently prescribed in this study (55.3%). Anticholinergic drugs such as benhexol are recommended to overcome the extrapyramidal side effects (EPS).

There was a slightly higher percentage of encounters with injections prescribed (18.6%) compared to the WHO standard of 10.1-17.0% [19]. Use of both depot and non-depot injections were encountered in this study. The depot injections were mostly used in patients with adherence problems. The non-depot injections were prescribed to achieve rapid effects in new or relapse patients although there has been advocacy for depot injection to enhance adherence and better prevention of relapse [20]. However, all antipsychotic drugs in this study were given in recommended doses. Drugs prescribed were below the maximum recommended dose specified in the official guidelines. This gives an impression that all medical doctors prescribing the antipsychotics were in tune with the dosage regimen of the drug and this is a very good trend. The use of high dose antipsychotics should be an exceptional clinical practice and only employed when standard treatments including clozapine have failed. Most prescriptions had a single antipsychotic drug as compared to combination antipsychotics. The use of antipsychotic co-treatment is generally discouraged by treatment algorithms and is allowed only as a last resort strategy after clozapine (the standard of care for treatment-refractory psychotic illness) has failed [21].

The average number of drugs per prescription, including non-antipsychotic drugs, obtained from this study, 2.17, was found to be slightly lower than the one obtained in a study carried out in Benin City, Nigeria (2.35) [12] but higher than WHO guideline (1.6-1.8) per prescription per encounter [22].

Polypharmacy in psychiatry is commonly referred to as the concurrent use of two or more psychiatric drugs in the same patient [9]. Polypharmacy increases the risk of morbidity and mortality in patients and also the cost of patients' treatment [23]. Psychotropic polypharmacy has also been said to put patients at risk of drug interactions with uncertain gains for quality of care and clinical outcomes [24]. Higher number of patients had only two drugs per prescription. This implies a lower incidence in drug interaction and cases of polypharmacy in the prescribed medicines.

There was high levels of stock-out records of antipsychotics in the hospital pharmacy (665, 47.5%). Much lower results were obtained in Federal Neuropsychiatric Hospital (FNPH) and University of Benin Teaching Hospital (UBTH), both in Benin-City, at 8.46% and 12.53% respectively [25]. The lower rates observed could have resulted from specialist nature of FNPH in the environment which could also impact on the sister tertiary health facility (UBTH) having a lower rate. This indicated that the availability was just slightly above average which is inimical to effective patient management where patients would not be able to receive their medication as at when due.

Conclusion

There was high levels of compliance with standard treatment guidelines by the prescribers. More medicines were prescribed using generic than brand names but the newer/atypical antipsychotics were significantly more prescribed by brand names. Products availability at hospital facility was found to be fairly appropriate.

Limitation of the study

The study was carried out using only one health facility therefore the results obtained was limited in application to the study area. Also, prescribers' identifiers were not studied therefore there could be variation in the standards of rational prescribing among the prescribers.

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Conflict of Interests

The authors declare no conflict of interest in carrying out the research.

Authors' contribution

All the authors contributed significantly in the success of

the research from theoretical framework, research proposal, data collection and analysis, and manuscript development.

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