

PATTERN OF PRESCRIPTION OF PSYCHOTROPIC MEDICATIONS IN PSYCHIATRIC HOSPITAL USELU, BENIN CITY, NIGERIA

John Edjophe Arute^{*1}, Deborah Obehi Onwusah³, Wilson Muobosa Oteri² and
Nwabueze Precious Ebiogbe⁴

^{1,2,4}Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy,
Delta State University, Abraka, Nigeria.

³Department of Clinical Pharmacy and Pharmacy Management, Faculty of Pharmacy,
University of Port-Harcourt, Rivers State, Nigeria.

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***Corresponding for
Author**

John Edjophe Arute
Department of Clinical
Pharmacy and Pharmacy
Administration, Faculty of
Pharmacy, Delta state
University, Abraka,
Nigeria.

ABSTRACT

BACKGROUND: Drug utilization studies are essential for evaluating the quality of care delivery of a health facility. **OBJECTIVES:** To evaluate the pattern of prescription of psychotropic drugs in a tertiary care centre in Nigeria. **METHODOLOGY:** The study was a cross-sectional one done at the Psychiatric Hospital, Uselu, Benin City, Nigeria from April to September, 2013. Systematic random sampling method was adopted and a well-designed prescribing indicator proforma was used in data collection. Prescription pattern data were analysed with respect to antipsychotic medications, and adjuvant psychotropic drugs. The following WHO prescribing indicators were used in evaluating the prescription pattern in the health facility, namely, average number of drug per encounter, percentage of

encounters with an injection prescribed and percentage of drugs prescribed from the WHO Model List of Essential Medicine. **RESULTS:** A psychotropic drug prescription pattern of the prescribers in the health facility was studied. The most commonly prescribed antipsychotics were fluphenazine decanoate, trifluoperazine and chlorpromazine. Depot preparation most commonly prescribed was fluphenazine decanoate and the most commonly prescribed long-acting depot preparation. Amitriptyline was the most frequently prescribed antidepressant. Antidepressants were averagely prescribed, more for female than male patients. **CONCLUSION:** Polypharmacy was a common practice in the health care facility. Typical antipsychotics were more commonly prescribed and the use of depot formulation was

prevalent. The most utilized drug was an anticholinergic (trihexyphenidyl). The prescription pattern at the health care facility was not in conformity with WHO guidelines as regard polypharmacy and percentage of encounter with injections.

KEYWORDS: Psychotropics, Prescription, Pattern.

INTRODUCTION

Despite the fact that the lifetime prevalence of schizophrenia accounts only for about 0.5-1.5%,^[1] and Bipolar disorder to be 1%, the WHO Global Burden of Disease study ranked schizophrenia fifth,^[2] and Bipolar disorder as the sixth leading cause of permanent medical disability,^[3] while in the Thai burden of disease study in 2002, major depression ranked as one of the top ten causes of disability adjusted life years.^[4]

Schizophrenia, Bipolar disorder and major depression affect a broad range of mental, psychological; and social functions and thus have very strong inputs on many aspects of daily living for the patients, their relatives and society at large.^[5]

Current evidence suggests that atypical antipsychotic drugs are superior to typical antipsychotics concerning negative symptoms and side effects and therefore more acceptable to patients,^[6,7] This might in turn result in improved therapy adherence and better health outcomes. Accordingly, atypical neuroleptics have gained a leading position in treatment recommendations for schizophrenia and bipolar disorder during recent years.^[8,9] However, recommendations are inconsistent.^[10] In addition, psychotropic medications are widely prescribed and the utilization of psychotic drugs is increasing. However, data on the utilization of psychotropic drugs in Nigeria, particularly in south-south Nigeria is lacking, hence this study.

Objective of Study

To determine the pattern of psychotropic drugs prescription in a tertiary health care facility in Southern Nigeria.

METHODS

Setting

This study was conducted at the Federal Psychiatric Hospital, Uselu, Benin City. The Psychiatric Hospital Uselu is a tertiary health care delivery centre and is one of the eight Mental Health Institutions owned by the Federal Government of Nigeria. The Psychiatric

Hospital caters for the needs of the people living in Edo State and neighbouring states including Delta State; and has a daily out-patient and in-patient services, apart from specialist psychiatry and training services. The hospital has a 220-bed capacity.

Inclusion Criteria

The inclusion criteria include:

- i) Being 18 years and above
- ii) Prescription containing psychotropic medications

Ethics and Informed Consent

Ethical permit was obtained from the Hospital Ethical Committee

Study Design/Procedure

The research work was a six months cross-sectional study conducted at the outpatient department of the Hospital. Random sampling was used in data collection for the study.

Data Collection

A systematic random sampling was adopted. Data were collection from the patients' prescription forms kept manually in the out-patient pharmacy department and entered into the data collection proforma. A total of 600 prescription forms were reviewed more than the 300 recommended by WHO reference for a single health care facility in order to increase the prescription of the parameters for a more reliable result.^[11]

Statistical Analysis

The data collected were carefully entered into a biostatistical table and analyzed using Statistical Package of Social Science (SPSS) software version 20 (Chicago, IL, USA). Descriptive statistics such as frequency and percentage were applied. All results were represented in table. Absolute numbers and simple percentages were used to describe categorical variables.

Prescribing indicators

The following WHO prescribing indicators were in evaluating the prescription in the health facility, namely, average number of drug per encounter, percentage of encounters with an injection prescribed, and also percentage of drugs prescribed from the WHO Model List of Essential Medicines.

Indicators were calculated based on the following ratios.

$$\text{Average number of drugs per encounter} = \frac{\text{Total number of drugs prescribed}}{\text{Total number of encounter surveyed}}$$

1. Percentage of encounters with an injection prescribed=

$$\frac{\text{Number of patient encounters with an injection prescribed}}{\text{Total number of encounter surveyed}} \times 100$$

2. Percentage of drugs prescribed from WHO Model List of Essential Medicines=

$$\frac{\text{Number of drugs prescribed from WHO Model List of Essential Medicine}}{\text{Total Number of prescribed drugs}} \times 100$$

RESULTS

Between April to September, 2013, 600 prescription forms retained in the pharmacy department were randomly selected from the pool of prescription forms and analyzed. A total of 1,350 psychotropic drugs were prescribed from the randomly selected prescription sheets/forms.

Table 1:

| TABLE 1: STUDY POPULATION BY GENDER AND AGE | | | | | | | |
|---|--------------|--------------|--------------|--------------|--------------|------------|------------|
| Gender | Age | | | | | Total | Percentage |
| | 18-24yr | 25-34yrs | 35-44yrs | 45-54yrs | >54yrs | | |
| Female | 41 | 113 | 60 | 44 | 60 | 318 | 53 |
| Male | 41 | 135 | 55 | 23 | 28 | 282 | 47 |
| TOTAL | 82 | 227 | 115 | 67 | 88 | 600 | |
| PERCENTAGE | 13.66 | 41.33 | 19.17 | 11.17 | 14.67 | | 100 |

53.0% of the retrospective study population was females and 47.1% were males.

46.44% of the prescribed drugs were taken by males while female patients took 53.56%. The total neuroleptic drugs prescribed was 806 (59.70%) of the 1350 prescribed drugs. 623 (77.30%) of the neuroleptic drugs were typical while 183 (22.70%) were atypical. Fluphenazine decanoate (depot injectable) which accounted for 22.70% was the most frequently prescribed typical antipsychotics, trifluoperazine (24.24%), chlorpromazine (22.10%), while risperidone (56.28%) was the most frequently prescribed atypical antipsychotic drug followed by olanzapine (43.17%) and clozapine (0.55%).

Generally, the most frequently prescribed drug was trihexyphenidyl (n=251) which accounted for 18.59% of the total prescribed drugs. Just over two-thirds (41.80%, 251/600) of the patients were on anticholinergics, benzhexol[®]. Next to it was fluphenazine decanoate

(14.70%), trifluoperazine (11.29%) while the least prescribed drugs were clozapine (n=1, 0.07%), clonazepam (n=1, 0.07%) and lorazepam (n=1, 0.07%).

Table 2: Summary of the utilization frequency of drugs by therapeutic class.

| TABLE 2a: DRUG UTILIZATION BY GENDER AND AGE | | | | | | | | | | |
|---|----------------------|----------|----------|-----------|--------|---------------|--------|-------|------------|--|
| DRUG | AGE/FREQUENCY | | | | | GENDER | | | | |
| FGA | 18-24yrs | 25-34yrs | 35-44yrs | 45-54yr s | >54yrs | Male | Female | Total | Percentage | |
| Chlorpromazine | 7 | 51 | 33 | 20 | 27 | 62 | 76 | 138 | 10.22 | |
| Fluphenazine | 17 | 91 | 43 | 25 | 18 | 102 | 92 | 194 | 14.37 | |
| Trifluoperazine | 12 | 74 | 29 | 14 | 22 | 56 | 95 | 151 | 11.19 | |
| Flupenthixol | 1 | 20 | 7 | 2 | 5 | 16 | 19 | 35 | 2.59 | |
| Haloperidol | 8 | 56 | 20 | 13 | 8 | 75 | 30 | 105 | 7.78 | |
| SGA | | | | | | | | | | |
| Risperidone | 21 | 43 | 16 | 10 | 13 | 51 | 52 | 103 | 7.63 | |
| Olanzapine | 12 | 34 | 19 | 7 | 7 | 33 | 46 | 79 | 5.85 | |
| Clozapine | | | 1 | | | | 1 | 1 | 0.07 | |
| ANTICHOLINER GICS | | | | | | | | | | |
| Trihexyphenidyl | 19 | 128 | 54 | 26 | 24 | 126 | 125 | 251 | 18.59 | |
| Biperidine | | 2 | | | | 1 | 1 | 2 | 0.15 | |
| MOOD STABILIZERS/ ANTICONVULSANTS | | | | | | | | | | |
| Carbamazine | 6 | 23 | 11 | 7 | 7 | 22 | 32 | 54 | 4.00 | |
| Sodium valproate | 7 | 16 | 7 | 5 | 3 | 16 | 22 | 38 | 2.81 | |
| TCA | | | | | | | | | | |
| Amitriptyline | 9 | 42 | 30 | 25 | 41 | 42 | 105 | 147 | 10.89 | |
| Imipramine | 1 | 3 | | | 1 | 2 | 3 | 5 | 0.37 | |

| TABLE2b: DRUG UTILIZATION BY GENDER AND AGE | | | | | | | | | | |
|--|----------------------|--------------|--------------|--------------|--------------|---------------|--------------|-------------|---------------|--|
| DRUG | AGE/FREQUENCY | | | | | GENDER | | | | |
| SSRI | 18 -24yrs | 25-34yrs | 35-44yrs | 45-54yrs | >54yrs | Male | Female | Total | Percentage | |
| Citalopram | | 4 | | | 4 | 3 | 5 | 8 | 0.59 | |
| Sertraline | 1 | 6 | 5 | | 1 | 7 | 6 | 13 | 0.96 | |
| Fluoxetine | 2 | | 1 | 1 | 2 | 3 | 3 | 6 | 0.44 | |
| Excitalopram | 2 | 1 | 2 | | 1 | 1 | 5 | 6 | 0.44 | |
| BZDP (ANXIOLYTICS) | | | | | | | | | | |
| Diazepam | 1 | 7 | 1 | | 1 | 7 | 3 | 10 | 0.74 | |
| Clonazepam | | 1 | | | | | 1 | 1 | 0.07 | |
| Bromazepam | | | | | 2 | 1 | 1 | 2 | 0.15 | |
| Lorazepam | | 1 | | | | 1 | | 1 | 0.06 | |
| TOTAL | 126 | 603 | 279 | 155 | 187 | 627 | 723 | 1350 | - | |
| PERCENTAGE | 9.33 | 44.67 | 20.67 | 11.48 | 13.85 | 46.44 | 53.56 | - | 100.00 | |

FGA= First Generation Antipsychotic Drugs

SGA= Second Generation Antipsychotic Drugs

TCA= Tricyclic Antidepressant Drugs

SSRI= Selective Serotonin Re-uptake Inhibitors

BZDP= Benzodiazepines.

Table 3:

| TABLE 3: FREQUENCY OF USE OF DEPOT PREPARATION. | | |
|--|------------------|-----------------------|
| DEPOT FORMULATION | FREQUENCY | PERCENTAGE (%) |
| Typical Antipsychotics | | |
| Chlorpromazine injection, | 1 | 0.4 |
| Haloperidol injection, | 8 | 3.2 |
| Fluphenazine decanoate injection | 194 | 77.3 |
| Flupenthixol injection | 35 | 13.9 |
| Atypical Antipsychotics | | |
| Risperidone injection | 1 | 0.4 |
| Olanzapine | 2 | 0.8 |
| Others | | |
| Diazepam | 9 | 3.6 |
| Biperidine | 1 | 0.4 |
| Total | 251 | 100 |

Fluphenazine decanoate constituted 27.3% of the depot preparation used during the period of study. Typical antipsychotics constituted 94.8% of depot formulations used; atypical antipsychotics accounted for 1.2%, diazepam had 3.6% share while biperidine constituted 0.4%.

The pattern of prescription in table 4 below shows that average number of 2.6 drugs was prescribed per encounter, 60% of all the drugs were prescribed from the WHO Model List of Essential Medicine (18th List, April 2013) and 42.0% of all encounter had at least one injection. Generic Prescription and the Health Facility Essential Medicine List were not considered during data collection.

TABLE 4: CONFORMITY OF PRESCRIBING PATTERN TO WHO CORE DRUG PRESCRIBING INDICATORS.

| Prescribing Indicators Assessed | Total Drugs/Encounter | Average/Percent | Reference Value |
|---|------------------------------|------------------------|------------------------|
| Total number of prescriptions analysed | 600 | - | - |
| Total number of drugs prescribed | 1560 | - | - |
| Average number of drugs per encounter | - | 2.6 | 1.6-1.8 |
| Percentage prescribed from WHO Model List of Essential Medicine | 936 | 60.0 | 100.0 |

| | | | |
|--|-----|-------|-----------|
| Percentage of encounter with injection | 251 | 41.83 | 13.4-24.1 |
| WHO= World Health Organisation | | | |

Table 5

| TABLE 5: THE DISTRIBUTION OF MONOTHERAPY | | | | | | | | | |
|--|----------|----------|----------|----------|--------|--------|--------|-------|------------|
| DRUG | AGE | | | | | GENDER | | Total | Percentage |
| | 18-24yrs | 25-34yrs | 35-44yrs | 45-54yrs | >55yrs | Male | Female | | |
| FGA | | | | | | | | | |
| Chlorpromazine | 2 | 2 | 2 | 1 | 2 | 5 | 4 | 9 | 7.7 |
| Fluphenazine | 4 | 3 | | | | 6 | 1 | 7 | 6.0 |
| Trifluoperazine | 1 | 2 | 3 | 1 | | 1 | 6 | 7 | 6.0 |
| Flupenthixol | | 1 | | | | 1 | | 1 | 0.9 |
| Haloperidol | | 3 | 1 | 1 | | 5 | 5 | 5 | 4.3 |
| SGA | | | | | | | | | |
| Risperidone | 10 | 7 | 3 | 1 | 1 | 13 | 9 | 22 | 18.8 |
| Olanzapine | 4 | 11 | 4 | 1 | 2 | 8 | 14 | 22 | 18.8 |
| ANTICHOLINERGICS | | | | | | | | | |
| Trihexyphenidyl | | 1 | | | | 1 | | 1 | 0.9 |
| TCA | | | | | | | | | |
| Amitriptyline | 2 | 1 | 4 | 5 | 5 | 7 | 19 | 26 | 22.2 |

Table 5b: THE DISTRIBUTION OF MONOTHERAPY CONTINUED

| DRUG | AGE | | | | | GENDER | | Total | Percentage |
|-------------------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|------------|
| | 18-24yrs | 25-34yrs | 35-44yrs | 45-54yrs | >55yrs | Male | Female | | |
| SSRI | | | | | | | | | |
| Citalopram | | 1 | | | | | 1 | 1 | 0.9 |
| Sertraline | | | 1 | | | | 1 | 1 | 0.9 |
| Fluoxetine | 1 | | | | 1 | 1 | 1 | 2 | 1.7 |
| Excitalopram | | | | | 1 | 1 | | 1 | 0.9 |
| MOOD STABILIZERS | | | | | | | | | |
| Sodium valproate | 1 | 1 | 1 | | | 1 | | 4 | 3.4 |
| Carbamazine | 1 | 4 | 1 | 1 | | 4 | 3 | 7 | 6.0 |
| BZDP | | | | | | | | | |
| Diazepam | | 1 | | | | 1 | | 1 | 0.9 |
| TOTAL | 26 | 48 | 20 | 11 | 12 | 56 | 61 | 117 | 100 |
| PERCENTAGE | 22.2 | 41.0 | 17.1 | 9.4 | 10.3 | 47.9 | 52.1 | | |

n=117

Monotherapy (prescription sheet with one drug) accounted for 19.5% Of the 600 prescription sheets. In other words, 19.5% of patients were on monotherapy during the period of study. Typical antipsychotics accounted for 24.0% of monotherapy while atypical antipsychotics accounted for 37.6%.

DISCUSSION

Prescription refers to a reflection of the physicians' attitude to the disease and the role of drug in disease treatment. It provides an insight into the nature of the health care delivery system.^[12]

Findings from the study reflect the pattern of psychotropic drugs prescription at the health care facility during the study period. Antipsychotic drugs were, by large extent, the most prescribed psychotropics, followed by antidepressants, mood stabilizers and then anxiolytics. Frequency of prescription studies have been found to be very useful in determining the prevalence of morbidity patterns of diseases.^[13] Hence, in this study, the high prescription frequency of antipsychotics indicates that psychotic disorders (schizophrenia) are more prevalent compare to other mental health conditions. This is consistent with previous reports that psychotic disorders are more prevalent among Africans and Blacks.^[14,15] Accordingly, depressive disorder was the second most prevalent psychiatric condition in the hospital, followed by manic disorders. The low prescription frequency of anxiolytics (Benzodiazepines) suggests that patients rarely present with anxiety disorder at the hospital during the period of study.

The study clearly shows that prescribers in the health facility prescribed conventional agents much more than the atypical agents. This can be attributed to the fact that newer agents are far more expensive; prescribers are more conversant and comfortable with them, and limited availability of newer agents.^[15] The study finding is similar to the report of a study in Psychiatric Hospital in Northern Nigeria where conventional antipsychotics were the most commonly prescribed psychotropic drugs.^[16]

The study also showed that antipsychotic depot injections were substantially used (fluphenazine decanoate (77.3%) and flupenthixol (13.9%)) during the period of study. Fluphenazine was the most commonly used typical antipsychotic agent. This suggests that majority of the study population were at the relapsing stage or non-adherent to oral medications since there are claims that depot medications significantly enhance medication adherence when compare to oral medications,^[17] and so Physicians may prefer the once daily profile of depot formulations.

Risperidone, olanzapine and clozapine were the prescribed atypical antipsychotics. Atypical antipsychotic agents accounted for about 13.28% of the total drugs prescribed. Risperidone

was the most commonly used atypical agent (50%), olanzapine (43%) and clozapine (1%). This finding is consistent with a study done in South-West Nigeria where only risperidone and olanzapine were prescribed and risperidone being the most commonly used atypical drug.^[18] The use of atypical drugs in the health care facility was markedly low compared to typical agents despite reports that newer/atypical agents are known to be better tolerated with less extrapyramidal side effects, require less dosage adjustment, administered on once daily dose frequency which is expected to enhance patients' adherence to treatment,^[11] recommended as first-line treatment because of their superior effect on negative symptoms and cognition, a lower incidence of acutely occurring extrapyramidal side effects, and growing evidence for a lower incidence of tardive dyskinesia.^[19, 20] The costs of atypical agents are very high and mostly unaffordable to the majority of low income patients.^[15, 14] This may be the reason for the limited use of these drugs in the health facility.

For the anticholinergic drugs, trihexyphenidyl (benzhexol[®]) was majorly used in the health facility for the control of extrapyramidal side effects in patients on typical antipsychotics and was almost equally used in both males and females (male=126 and female=125). Trihexyphenidyl was the most prescribed drug encountered during the period of study and same finding was reported by.^[15] The routine use of the medication was as a result of predominant prescription of conventional antipsychotics. Anticholinergics are used for the short-term prevention of acute extrapyramidal side effects in patients on antipsychotics, which have been found beneficial in many studies.

For the antidepressants which are the third most prescribed category, TCAs were clearly the most frequently prescribed compared to SSRIs. Amitriptyline accounted for more than two-third (79%) of the antidepressants, with sertraline coming a distant second (7.0%). Fluoxetine, imipramine, citalopram and escitalopram accounted for only about 14% of antidepressants prescribed. The finding of this study as regards the frequent use of TCAs especially amitriptyline is consistent with previous studies.^[15, 21, 22] TCAs were frequently prescribed compared to SSRIs despite the fact that TCAs produce a wide range of unwanted adverse effects which often have negative impact on patients' adherence and tolerance.^[19] Unlike SSRIs that have better side effects profile, wider therapeutic window and once daily dose frequency which are expected to improve patients' adherence.^[23] Though TCAs and SSRIs have similar clinical efficacy and time course,^[24] the frequency prescription of the TCAs may predispose the patients to more problematic adverse effects associated with TCAs.

WHO guidelines on rational use of drugs in the region recommend a range of 1.6-1.8 drugs per encounter,^[25] The study result showed an average of 2.6 drugs per encounter by prescribers in this study site. However, higher value of 3.99 from Ilorin.^[26] and 4.4 from Benin City,^[12] and values of 3.3 and 3.5 from Northern Nigeria.^[27, 28] have been reported. Over 80% of the prescriptions had at least two drugs. Therefore, polypharmacy (use of more than one drug) was a common practice in psychiatry. This study finding buttress the point that polypharmacy is a common practice in psychiatry reported previously by,^[29] and.^[30] A possible justification for using antipsychotic combinations (polypharmacy) is that one of the agents is being utilized for its antipsychotic effects and that the second agent is targeting co-morbid conditions such as insomnia or agitation. Several complications accompany this practice such as early death,^[31] increased chances of extrapyramidal symptoms.^[32,33] worsening of verbal memory and increased risk of tardive dyskinesia, hyperprolactinemia and adverse drug interactions either through inhibitions of metabolism or through potentiation of toxic effects such as prolongation of QT interval,^[34] as well as increased cost and therapeutic duplication.

Percentage of drugs prescribed from WHO Model List of Essential Medicine (18th List, April 2013) was 60%. This relatively high percentage of prescription from the WHO Model List possibly reflects that the hospital drug bulletin was adopted from the WHO Essential Drug List. This is similar to 56% reported by a study done in South-East Nigeria.^[15]

Findings suggest high incidence of injection use as the percentage of encounter with injection was 41.83%, higher than the WHO recommendation of 13.47%-24.1%. The high incidence of injection use is possibly due to the use of fluphenazine decanoate and Flupenthixol for the treatment of relapse or non-compliant patients. The incidence of injection use in the health facility is higher than 14% reported in Federal Psychiatric Hospitals, Enugu.^[15]

CONCLUSION

Polypharmacy was a common practice in the health care facility. Typical antipsychotics were more commonly prescribed and the use of depot formulation was prevalent. The most utilized drug was an anticholinergic (trihexyphenidyl). The prescription pattern at the health care facility was not in conformity with world health organization guidelines as regard polypharmacy and percentage of encounter with injections.

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