

ORIGINAL ARTICLE

Five-year trend of antipsychotic prescription practices in a district Hospital in Ghana: A retrospective study

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Abstract

Introduction: Antipsychotics are the mainstay treatment for psychotic conditions. Their prescription, however, should come with some caution since the consequences of their side effects can be dire for the patient receiving the prescription. Because of inadequate experts in low-middle-income countries, non-experts are trained through the Mental Health Gap Action Program (MHGAP) to reduce the treatment gap. This retrospective study analyzed the trend of antipsychotic prescriptions in a district hospital where mental health services are delivered by non-experts.

Methodology: This was a retrospective descriptive study that gathered data between 2015 and 2019 from the electronic database of the hospital. Statistical analysis was conducted using SPSS version 20. We reported the descriptive statistics of our findings in the form of frequencies and percentages.

Results: There was a year-on-year increase in antipsychotic prescriptions over the study period. Starting with 48.1% in 2015 to 56.4% in 2019. The main condition for which antipsychotics were prescribed was psychosis (58.6%), followed by substance use disorder (SUD) (26%). Patients with age ≥ 50 received the most prescription of antipsychotics. Starting from 2015, there was a high percentage of typical antipsychotic prescriptions (90.14%) with atypical antipsychotics being 9.86% and by 2019 atypical antipsychotic prescriptions had shot up to 74.8%. Polypharmacy prescription rate was 8.1% over the study period.

Conclusion: Antipsychotics are essential in the treatment of psychosis and other mental health conditions. Prescribers need to know more about these drugs to prescribe them appropriately and to minimize the likelihood of side effects among patients who use these drugs.

KEYWORDS

antipsychotics, atypical, EPSE, meso-cortical, meso-limbic, MHGAP, nigrostriatal, polypharmacy, tuberoinfundibular, typical

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1 | BACKGROUND

Antipsychotics are the mainstay of treatment for psychotic illnesses.¹ They are classified into first-generation (typical) and second-generation (atypical) antipsychotics.² The typical antipsychotics have been in existence before the 1990s; however, they were not without side effects. The side effects are said to result from their non-selective blocking of the dopaminergic pathways in both the cortex and the limbic systems of the brain.³ This is responsible for the positive and negative symptoms they cause through blocking of the meso-limbic and meso-cortical pathways. They are also known to cause Extrapyramidal side effects (EPSE) through the blockade of the Nigro-striatal pathway. Other side effects associated with the typical antipsychotics are galactorrhoea, infertility, and hypotension, to mention a few, as a result of the blockade of the tuberoinfundibular pathway of dopamine.⁴ The second-generation (atypical) antipsychotics were introduced later, devoid of most of the EPSE and the negative symptoms associated with the first-generation drugs. This advantage has been attributed to the easy dissociation of the second generation from the receptors they bind to.⁵ Also, they are selective and block the meso-limbic pathway more than the meso-cortical pathway; hence, they do not show the same negative symptoms as the first generation.⁶ Even though the second-generation antipsychotics seem to have found favor with modern day prescribers, they are not without side effects. They are associated with metabolic syndrome, which is a challenge for practitioners and patients.⁷⁻⁹ Taking cognizance of the fact that one of the main complications of schizophrenia is cardiovascular disease, which is actually one of the causes of early mortality among these patients, second-generation should be avoided in patients who are at high risk of metabolic syndrome.¹⁰ The atypical antipsychotics have been perceived as being more efficacious than the typical antipsychotics.¹¹ This however was disproved by Lieberman et al, in the infamous "CATIE Trial" where they showed that apart from clozapine, all the other antipsychotics were equally efficacious.¹² This study has however been widely criticized for several reasons including high dropout rates.¹³⁻¹⁵

Antipsychotics, though known for the management of psychosis, are sometimes used for other conditions such as bipolar affective disorders, autism, ADHD, depression, and dementia for various reasons.^{16,17}

Despite the worldwide availability of both typical and atypical antipsychotics and evidence to the equality in their efficacy as shown in the "CATIE" Trial,¹² the prescription of antipsychotics in some countries have been skewed toward the atypical antipsychotics showing a gradual shift away from the typical antipsychotics. This is exemplified by a study from England and Wales where atypical antipsychotics formed 79.9% of all antipsychotics prescriptions between 2007 and 2014.¹⁸ Also, a cross-sectional study from Ghana reported that olanzapine was the most prescribed antipsychotic in two of the major psychiatric hospitals.¹⁹

Antipsychotic use run through the various age groups and has seen some steady rise in use over the years.²⁰ In the United States,

antipsychotic prescription among insured children was found to have increased from 0.27% in 2007 to 0.29% in 2009 of the total antipsychotics prescribed within the period. It was used for various pediatric conditions such as pervasive developmental disorder, conduct or disruptive behavior disorder, and ADHD.²¹ A higher margin of increase was found by Olsfen et al. who report that antipsychotic prescription among children for similar conditions had doubled from 0.78% to 1.58% of the total antipsychotic prescriptions among privately insured patients.²² This notwithstanding, the use has seen a reduction among the elderly population especially those with dementia.¹⁶

In Ghana, like most low- and middle-income countries, there are very few psychiatric specialists²³ which implies that most of the prescribers may not have adequate knowledge about these antipsychotics they prescribe.²⁴ There is the problem of polypharmacy which is defined as combining two or more antipsychotic drugs for an individual. The consequences of polypharmacy are dire as they have the tendency to worsen side effects, such as EPSE and neuroleptic malignant syndrome (NMS) to mention a few.²⁵ This retrospective study sought to describe the trend of antipsychotic prescription from 2015 to 2019 at a district hospital in Ghana.

The study sought to answer the following questions:

1. What proportion of attendants at the mental health unit were treated with antipsychotics?
2. What proportion of attendants were prescribed atypical antipsychotics compared with those who received typical antipsychotic drugs over the study period?
3. What were the diagnosis for which antipsychotics were prescribed?
4. Was there an increase or decrease in the prescription of antipsychotics over the study period?
5. What was the extent of polypharmacy in the prescription pattern of antipsychotics over the study period?

2 | METHODOLOGY

2.1 | Study setting

The War Memorial Hospital is the major referral center in the Kassena-Nankana municipality. It serves patients from both Ghana and some parts of Burkina Faso which borders Ghana to the north. There are five medical doctors and 100 nurses, however, with five psychiatric Nurses. The hospital is made up of surgical department, medical, pediatrics, obstetrics and gynecology, and the Mental Health Unit. The hospital has a bed capacity of 200 beds and sees about 5000 patients in a month. The average number of patients seen at the psychiatric unit daily at the outpatient department (OPD) is 40 with an average of two admissions per day but refers any patient who require admission for more than 24 hours to the psychiatric hospital for admission and further management because of the absence of a psychiatrist in the Hospital.



2.2 | Study design

This study employed a cross-sectional descriptive study design to examine the trend of antipsychotic prescriptions.

2.3 | Study population

The study population comprised of patients attending the mental health unit of the hospital. The study participants included all patients who received antipsychotic prescriptions from 2015 to 2019. The study excluded those who received antipsychotic prescriptions prior to the study period.

2.4 | Data collection

We retrieved the records of all mental health service users at the hospital from January 2015 to December 2019 from the electronic database at the mental health unit. The hospital migrated all health records to an electronic database in August 2014. The electronic database had complete information from 2015 to 2019 at the time the study was carried out. The study was carried out between August and December 2020. The database captured both demographic and health records including the medications prescribed for each patient from their first attendance to their last review. Regardless of the number of attendances, all patients who had received antipsychotic prescriptions throughout the study period were identified and recorded by the first author as they appeared in the database. By this, each visit was captured as part of the total attendance while each time antipsychotics were prescribed was captured as part of total antipsychotic prescription. The second author cross-checked the data retrieved to ensure its completeness.

For the purposes of this study, we grouped the diagnoses into five categories: (1) psychosis representing all psychotic conditions, (2) depression, (3) bipolar affective disorders (BAD) and mania, (4) substance use disorder (SUD), and (5) others made up of all other conditions including ADHD, autism, epilepsy, and intellectual disability. We, however, did not have any direct contact with the patients in anyway.

2.5 | Data analysis

Data were entered onto an excel sheet, from which data entry errors were cleaned and further exported to Statistical Package

for Social Sciences (SPSS) Version 20 where data analysis was performed. Data were analyzed using descriptive statistics of frequencies and percentages with cross-tabulations to compare proportions.

3 | RESULTS

Over the 5-year period, there was a total of 1192 patients who attended the mental health unit of the hospital as per the data extracted from the database. Out of this number, 639 were prescribed antipsychotics. After data cleaning, 630 of those prescribed with antipsychotics had complete data, hence the total number of attendants who received antipsychotic prescriptions used in the analysis were 630 which represented (52.9%). The study found that from 2015, 2016, 2017, 2018, to 2019, 48.1%, 51.4%, 50.8%, 62.6%, and 56.4% of patients attending the mental health unit received antipsychotic prescriptions, respectively, as shown in [Table 1](#).

Among the recipients of antipsychotic prescriptions, 60.8% were males and the modal age range was ≥ 50 years. The dominant diagnoses for which antipsychotics were prescribed were psychotic disorders (58.6%).

Moreover, overall, typical antipsychotics were mostly prescribed (59.2%) and polypharmacy rate was 8.1% of all prescriptions over the 5-year period as shown in [Table 2](#).

Regarding the year-on-year prescriptions of antipsychotics, the study found that there was a general decrease in typical antipsychotic prescription from 2015 (90.14%), 2016 (61.0%) with a slight increase in 2017 (63.4%) then a decrease in 2018 (45.3%) and further decrease to 25.2% in 2019. The reverse was true for atypical antipsychotic prescription which showed a general increase from 2015 (9.8%), 37.4% in 2016 and a slight decrease in 2017 (35.7%) and increased to 51.67% in 2018 and finally to 74.8% in 2019 as shown in [Figure 1](#).

In respect of polypharmacy, the year-on-year polypharmacy prescription also saw a decline from 2015 (8.6%), to 2016 (7.7%), with a sharp increase to 12.3% in 2017 and then decreased sharply to 6.1% in 2018 and finally 5.0% in 2019 as shown in [Table 3](#).

4 | DISCUSSION

This study sought to retrospectively describe the 5-year trend of antipsychotic prescription from 2015 to 2019 in a district hospital

	YEAR					TOTAL
	2015	2016	2017	2018	2019	
Total no. of attendances (N)	289	278	256	158	211	1192
No of antipsychotic prescriptions (n)	139	143	130	99	119	630
Percentage (%)	48.1	51.4	50.8	62.6	56.4	52.9

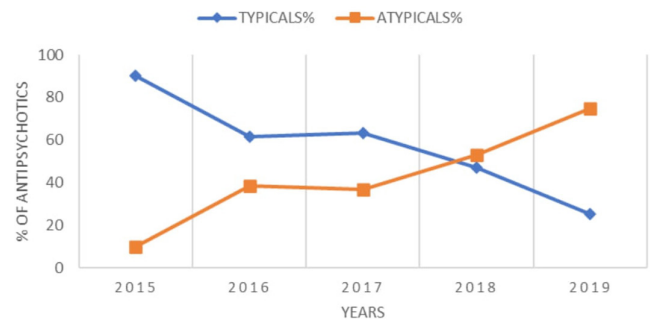
TABLE 1 Number of attendances per year against the number of antipsychotic prescriptions.

TABLE 2 Demographic characteristics of patients receiving antipsychotics.

	Frequency	Percent
Sex		
Male	383	60.8
Female	247	39.2
Total	630	100.0
Age		
1–17	140	22.2
18–28	101	16.0
29–39	132	21.0
40–49	112	17.8
≥50	144	22.9
Missing data	1	0.2
Total	630	100.0
Diagnosis		
Psychosis	369	58.6
Depression	22	3.5
Mania/Bad	24	3.8
SUD	164	26.0
Others	51	8.1
Total	630	100.0
Antipsychotics		
Typicals	373	59.2
Atypicals	254	40.3
Missing data	3	0.5
Total	630	100.0
Polypharmacy		
No polypharmacy	579	91.9
Polypharmacy	51	8.1
Total	630	100.0

in Ghana. A total of 1192 attendances were recorded at the mental health unit out of which 52.9% received antipsychotic prescriptions. The modal age range of those receiving antipsychotics was ≥50, with the majority being males. Psychotic disorders were the main reasons for which antipsychotics were prescribed. Moreover, all prescriptions put together, typical antipsychotics were prescribed more often compared to atypical antipsychotics.

The study found that there were more males (60.8%) who received antipsychotics compared to females. This finding is similar to findings by Aileen et al. who reported 56% of males as receiving antipsychotics²⁶ and also, Olfson et al. reported that 51% of male children received antipsychotics.²² Moreover, Curtis and colleagues reported that males were more than twice likely to be prescribed antipsychotics compared to females.²⁷ This may be due to the reason that females are more responsive and more likely to develop side effects of antipsychotics, hence should be given with caution.²⁸

**FIGURE 1** Year-on-year trends of typical and atypical antipsychotic prescriptions.**TABLE 3** Polypharmacy prescription of antipsychotics over the 5-year period.

Year	Total number of antipsychotic prescriptions (n).	No. of polypharmacy prescriptions (n).	Percentage (%)
2015	139	12	8.6
2016	143	11	7.7
2017	130	16	12.3
2018	99	6	6.1
2019	119	6	5.0

This study also found that antipsychotics were more prescribed for people within the extreme of ages, that is, patients between 1 and 17 years and ≥50 years. Among ages 1–17, our finding is similar to that of Curtis et al. who studied antipsychotic use among children in the United States of America and reported that 26.7% of children under 19 years of age were prescribed antipsychotics. This could be explained by the fact that about half of mental disorders begin in the teenage years²⁹ and so are more likely to be treated with antipsychotics. Among those aged 50 years and above, our finding is in tandem with Aileen et al. who found 23% of patients above 50 years were treated with antipsychotics for various reasons.²⁶ This might be because of numerous old age conditions that might be diagnosed as psychosis due to poor knowledge in geriatrics^{30,31} hence a preponderance of antipsychotic prescription among this age group.

Furthermore, the study found that, despite the year-on-year variations in antipsychotic prescription rates, there was an increase from 2015 (49.1%) to 62.6% in 2018 with a slow decrease to 56.9% in 2019 indicating a general increase in antipsychotic prescription over the study period. Similar finding was reported by Roberts et al. who found a year-to-year increase in the number of antipsychotic prescriptions from 66.6% to 79.9% over the 7-year period of study.¹⁸ This could probably be explained by the increasing incidence of mental illnesses especially in low- and middle-income countries due to socioeconomic challenges.³²

Moreso, the study indicated that, except for 2017, there was a constant drop in the prescription of typical antipsychotics from 2015 to 2019. This notwithstanding, there was a general gradual rise in atypical antipsychotic prescriptions albeit with a slight decrease



in 2017. This is consistent with studies by Wheeler et al. who found a consistent increase in atypical antipsychotic prescription of about 18.6% with a gradual decrease in the typical antipsychotics prescriptions.³³ This is further corroborated by a study from Australia which also reported an increase in atypical antipsychotic prescription from 61% to 77% over a 5 year period.³⁴ The shift from typical antipsychotics to atypical antipsychotics prescription may be as a result of the low EPSE profile of atypical antipsychotics compared with the typical antipsychotics.³⁵

Finally, polypharmacy was found to be low with a rate of 8.1% over the period of study. This finding is lower than what is reported in similar studies such as a study conducted in Auckland which reported 14.6% of polypharmacy in antipsychotic prescription.³³

5 | LIMITATIONS

The study is the first of its kind in Ghana reporting the antipsychotics prescription practices from a district hospital where non-experts are involved in the prescription of antipsychotics. The study provides a fair idea of the conditions for which these agents are prescribed and also discusses some of the challenges associated with these practices. Despite the level of information the study provides, it is however without limitations.

One of such limitations is that the study was facility-based and hence the findings may not be generalizable. Also, this study did not establish a correlation between antipsychotic prescriptions and sociodemographic characteristics due to the lack of adequate data in the health records system. Another limitation in this study is the non-inclusion of statistical inferences. This is because, the study sought to report through a descriptive study design to provide a general over view of the antipsychotic prescription practices in a district hospital.

6 | CONCLUSION

This study found a significant change in antipsychotic prescription with a year-on-year increase in the number of prescriptions. Of particular interest is the consistent shift from a typical antipsychotics prescription to atypicals. This may be due to the availability of the newer generations and their added benefit of low-EPSE profile compared with the typical agents. Polypharmacy prescription was found to be low in this study. With the world taking action to reduce the mental health treatment gap by training non-mental health experts to diagnose and manage mental health conditions, it will be necessary for the regular monitoring of antipsychotic prescriptions to ensure the safety of the patients who are prescribed these drugs.

It is recommended that a larger study is done possibly country-wide to ascertain the prescription patterns of antipsychotics in the facilities where non-experts are managing psychiatric patients and to further ascertain the challenges both patients and prescribers go through in Ghana.

AUTHOR CONTRIBUTIONS

DBD, AA, and AF conceived the idea. DBD, AA, and TTL developed the study protocol. DBD, AA, TTL, AF, and NA collected the data. DBD, AA, and TTL cleaned the data and analyzed them. DBD, AA, SA, AGA, and NA wrote the manuscript, and all authors proof-read and edited the manuscript. All authors approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article

ETHICS STATEMENT

Approval of research protocol by an Institutional Reviewer Board: We obtained ethical approval from the Regional Health Directorate and institutional approval from the Medical Superintendent of the Hospital before access to the data was granted. Authors involved in this study did not have any encounter with the patients whose data were accessed and used in this study. The authors however ensured that the data collected were coded to ensure anonymity and privacy. Informed consent: As a retrospective study, informed consent was not required. However, we released information on this research so that patients who were unwilling for their data to be used for this study were free to opt out.

Registry and the registration no. of the study/trial: N/A.

Animal studies: N/A.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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