

Prescription Pattern of Anti-Asthma Medications in University of Port-Harcourt Teaching Hospital Choba, Rivers State, Nigeria

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ABSTRACT

Background: Asthma is a chronic respiratory condition that significantly impact on the quality of life and poses a substantial burden on healthcare systems. Effective management of asthma relies heavily on appropriate drug utilization. This study aimed to evaluate the prescription patterns of anti-asthma drugs at the University of Port Harcourt Teaching Hospital (UPTH), Choba, Rivers State, over a four-year period (2020-2023). Specific objectives included 1) To determine the frequency and distribution of anti-asthma drug prescriptions, 2) To identify the most frequently used routes of administration, 3) To identify trends in anti-asthma drug prescription, and 4) To determining the average frequency of hospital visits by asthma patients.

Methodology: A retrospective descriptive design was adopted, involving a randomized review of 192 patient records from UPTH's medical archives. The study population consisted of both adult and children, with a sample size determined using the Taro Yamane formula. Data were collected on prescribed medications, administration routes, and patient visit frequencies. Descriptive statistics were employed for data analysis using SPSS version 25.

Results: The results revealed a preference for inhalation anti-asthmatic drugs (75.5%), followed by oral (19.7%) and inject-able forms (4.8%). Salbutamol inhaler was the most frequently prescribed medications across all age groups with a decreasing trend in the average frequency of hospital visits, dropping from 4 visits per patient in 2020 to 2 visits in 2023. Consistent drug prescription pattern was noted with a higher prescription rate of inhaled medications, especially among children.

Conclusion: There was predominant use of inhalation therapies in asthma management at UPTH, reflecting current best practices in asthma care and a reduction in hospital visit frequency over the years under study. This suggests a potential improvements in outpatient asthma management and possible patient adherence to prescribed therapies.

Key words: Prescription, Pattern, Asthma, Pattern, Management

INTRODUCTION

Asthma is a chronic, inflammatory respiratory disorder affecting millions of people worldwide. It is characterized by episodic symptoms such as wheezing, shortness of breath, coughing and chest tightness. Asthma impacts patients in varying degrees and can significantly affect quality of life. The Global Burden of Disease study estimates that over 300 million individuals suffer from asthma, contributing to substantial morbidity and economic strain globally (World Health Organization [WHO], 2021). Despite the availability of effective treatments, inadequate management still results in frequent exacerbation and preventable deaths (Baker, et al., 2023).

The World Health Organization (WHO) reports that asthma is responsible for 15 million disability-adjusted life years (DALYs) lost annually, with 250,000 deaths attributable to it each year. In the United States alone, asthma

affects around 25 million people, leading to nearly 2 million emergency visits annually. In Africa, the prevalence of asthma has steadily risen, with approximately 34.1 million cases reported in 1990 (Adeloye et al. (2013). In countries such as Nigeria, where roughly 10% of the population is affected by asthma, the burden is especially pronounced in densely populated urban areas. Factors such as high levels of pollution, industrialization, and changes in lifestyle contribute to higher asthma rates in cities than in rural regions ((Ozoho et al., 2019, Osarogiagbon et al., 2021). The number of individuals with clinical asthma in Nigeria is approximately 13 million, (Ozoho et al., 2019; Osarogiagbon et al., 2021). A recent survey conducted in Lagos, one of Nigeria's largest cities, estimated an asthma prevalence of 12.5% among school-aged children, highlighting the growing burden of asthma among young individuals (Osagie & Johnson, 2019).

Good Prescription Pattern: A necessity in Asthma Management

Prescription patterns as an important aspect of the broader drug utilization studies (DUS) are essential tools in healthcare research and practice, particularly in understanding how medications are prescribed, dispensed, and consumed outside of controlled clinical environments (WHO, 2018). By examining real-world medication use, DUS help bridge the gap between clinical guidelines and actual practice. In the context of asthma management, where optimal treatment adherence is crucial for effective disease control, Prescription patterns serve as valuable resources for evaluating the alignment of medical practice with established guidelines and identifying areas for improvement (Amorha, et al., 2022).

Trends in Anti-Asthma Drug Utilization

The approach to asthma management has evolved significantly over the past decades, shifting from symptom-based relief to long-term control strategies. In the 1980s, asthma treatment primarily involved bronchodilators for symptom relief, but as the role of inflammation became better understood, corticosteroids and other anti-inflammatory agents emerged as cornerstones in asthma management. In Nigeria, traditional therapies were widely used, but the availability of modern pharmacologic treatments has gradually increased, leading to more effective asthma management strategies and improved patient outcomes (Adeniyi, et al., 2020).

Objectives

This study aimed to evaluate the utilization patterns of anti-asthmatic drugs at the University of Port Harcourt Teaching Hospital (UPTH), Choba, Rivers State, Nigeria, over a four-year period (2020-2023). Specific objectives included:

- To determine the frequency and distribution of anti-asthmatic drug prescriptions.
- To identify the most frequently used routes of administration,
- To identify trends in drug utilization, and
- To determine the average frequency of hospital visits by asthmatic patients.

METHODOLOGY

A retrospective descriptive design was adopted, involving a randomized review of 192 patient records from UPTH's medical archives. The study population consisted of both adults and children, with a sample size determined using the Taro Ya mane formula. Data were collected on prescribed medications, administration routes, and patient visit frequencies. Ethical approval was obtained from Ethics and Research Committee, UPTH (Ref. No: UPTH/ADM/90/S.11/VOL.XI/1803). Descriptive statistics were employed for data analysis using SPSS version 25.

RESULT AND FINDINGS

The results revealed a preference for inhalation anti-asthmatic drugs (75.5%), followed by oral (19.7%) and inject-able forms (4.8%).

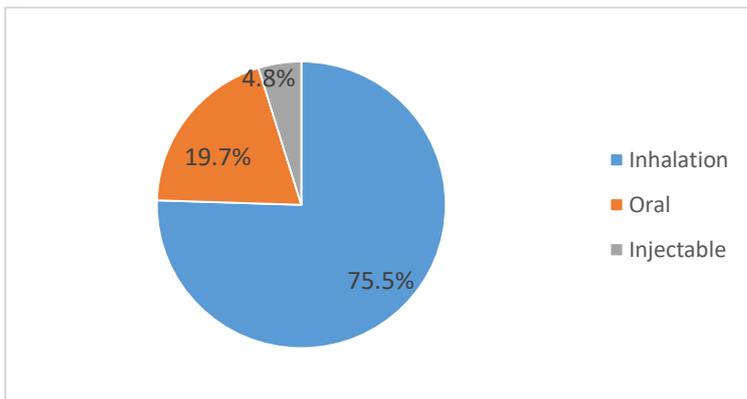


Figure 1: Frequency of use of particular route of drug administration

Table 1: Frequency of drug prescription based on Inhalation route from 2020 to 2023

Drug	2020		2021		2022		2023	
	f	%	f	%	f	%	f	%
Salbutamol (Inhaler)	46	30.9	30	29.7	38	32.0	27	38.0
Salbutamol (Nebules)	32	21.5	19	18.8	21	17.6	9	12.7
Salmeterol/Fluticasone	19	12.7	11	10.9	13	11.0	22	31.0
Budesonide/Formoterol	15	10.1	16	15.8	22	18.5	3	4.2
Formoterol	17	11.4	15	14.8	18	15.1	8	11.3
Budesonide	20	13.4	10	9.9	7	5.9	2	2.8
Total	149	100.0	101	100.0	119	100.0	71	100.0

Key: f = Frequency

Table 2: Frequency of drug Prescription based on Oral Route from 2020 to 2023

Drug	2020		2021		2022		2023	
	f	%	f	%	f	%	f	%
Salbutamol (Tablets)	10	20.0	16	61.5	8	38.1	15	83.3
Montelukast	10	20.0	2	7.7	6	28.6	0	0.0
Aminophylline (Tablets)	13	26.0	8	30.8	5	23.8	2	11.1
Theophylline	17	34.0	0	0.0	2	9.5	1	5.6
Total	50	100.0	26	100.0	21	100.0	18	100.0

Key: f = Frequency

Prescription and utilization of injectables had an average decline between 2020 and 2023. Aminophylline was the only injectable prescribed.

DISCUSSION

The current study provides valuable insights into the prescribing patterns and trends of anti-asthma drugs at UPTH through the evaluation of medical records of selected asthma patients within the University of Port Harcourt Teaching Hospital over a four-year period (2020 - 2023).

Objective I: Frequency and distribution of Anti-asthmatic Drugs Prescribed in UPTH

The frequency and distribution of anti-asthmatic drugs at UPTH revealed that Salbutamol (Inhaler) was the most commonly prescribed inhalation drug, peaking in 2023, while other drugs like Salbutamol (Nebules) and Budesonide declined in usage over time. This pattern highlights a significant reliance on short-acting beta-agonists (SABAs) in managing asthma symptoms, a trend also observed in Rafeeq and Murad (2017) evaluation of prescription patterns, where bronchodilators were the predominant category. However, unlike the adherence to inhalational therapy in the Saudi study, the consistent decline in inhalation drug prescriptions at UPTH could reflect barriers to accessibility or affordability.

In contrast, oral drugs such as Montelukast saw intermittent peaks, with Salbutamol tablets increasing in 2023. Similarly, Gomathi (2021) findings in Tamil Nadu reported a high reliance on oral therapies due to socioeconomic limitations, which may explain the fluctuating prescription patterns in UPTH. The consistent use of inhalational over oral and injectable routes aligns with international guidelines emphasizing localized therapy for asthma management. However, the drop in Budesonide/Formoterol usage warrants further investigation, potentially reflecting a gap in the adoption of combination therapy, as reported by Arul et al. (2023).

Objective II: Most used route of Anti-asthma Drug Administration in UPTH

The study found inhalation therapy to be the most utilized drug formulation, accounting for 75.5% of all anti-asthma drug prescriptions, compared to oral (19.7%) and injectable (4.8%). This preference for inhalational delivery mirrors global trends emphasizing the benefits of direct pulmonary drug delivery for asthma. Previous studies (Arul et al., 2023; Rafeeq & Murad, 2017) similarly identified inhalation as the preferred route, highlighting its effectiveness and minimal systemic side effects.

The low adoption of parenteral therapy further supports findings from the reviewed literature, where injectable routes were reserved for severe or emergency cases. However, the decline in overall inhalation prescriptions may indicate barriers such as inadequate patient education on inhaler techniques or cost constraints, echoing adherence challenges identified by Mgbahurike and Gabriel (2022) among asthmatic students in Port Harcourt.

Objective III: Trends or Changes in Anti-asthmatic Drug Utilization Over the Study Period

A fluctuating trend in inhalational drug utilization was observed, with an initial decline in 2021, a peak in 2022, and another drop in 2023. Oral drugs showed a steady decrease, while parenteral therapy demonstrated a consistent decline. These trends reflect evolving prescribing habits and potentially improved outpatient asthma control, as indicated by a reduction in the average number of hospital visits.

The shift from parenteral therapy supports findings from Heluf et al. (2022), where lower adherence rates were linked to complex or invasive treatments. Similarly, the declining trend in oral drugs aligns with global preferences for inhalational therapy, though local socioeconomic factors likely influence these patterns.

The inconsistent trend in inhalational prescriptions may reflect challenges in ensuring uninterrupted access to inhalers, as observed by Gomathi (2021) in Tamil Nadu. The reduced reliance on oral drugs like Montelukast and Aminophylline further underscores the transition towards guideline-recommended therapies, though economic barriers may still limit full adherence.

Objective IV: Average Frequency of Hospital Visits by Asthmatic Patients

The decline in hospital visits from an average of 4 visits in 2020 to 2 visits in 2023 suggests potential improvements in asthma management, either through enhanced outpatient care or better patient adherence. This

trend aligns with Mgbahurike and Gabriel (2022), where education and access significantly impacted adherence and reduced exacerbation.

The reduced frequency of visits could also indicate improved disease control through consistent inhalation therapy, though the reviewed literature emphasizes the role of patient education and regular follow-ups in sustaining such outcomes. The impact of affordability and accessibility remains a critical consideration, as demonstrated in Adeyeye et al. (2011) study on complementary medicine use, where resource limitations prompted alternative approaches to care.

Implications of Findings

The results of this study have significant implications for asthma management in a tertiary healthcare setting. The predominant use of inhalation therapies indicates a positive alignment with current best practices, emphasizing the need for continuous availability of these medications. However, the declining trends in drug utilization and hospital visits raise concerns about potential under-treatment or reduced access to care, especially in the latter years of the study period. To address these issues, it is crucial to enhance patient education on the importance of regular follow-up and adherence to prescribed therapies.

CONCLUSION

There was a predominant use of inhalation therapies in asthma management at UPTH meaning that inhalation route was the predominant route of drug administration for asthma patients in this facility. This is reflective of current global best practices in asthma care. There was also a reduction in hospital visit frequency over the years under study. This suggests potential improvements in outpatient asthma management and possible patient adherence to prescribed therapies.

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