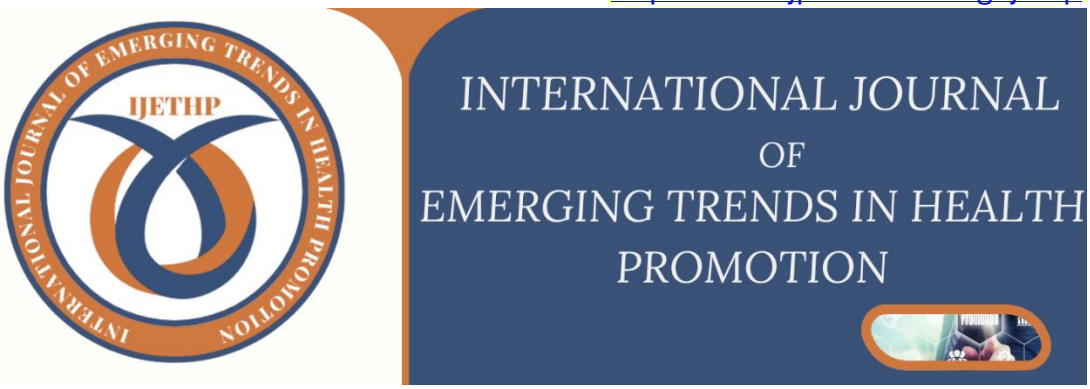
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MALARIA PREVALENCE AND PRESCRIBERS' KNOWLEDGE OF WHO STANDARDS FOR ACT USAGE: A CASE STUDY IN LAGOS STATE

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Abstract

Malaria remains a significant public health challenge in Nigeria, consistently contributing to high morbidity rates reported in hospitals. Despite global advancements in malaria treatment, concerns persist about prescribers' adherence to the World Health Organization (WHO) guidelines for Artemisinin-based Combination Therapies (ACTs), the cornerstone of malaria management. This study aimed to assess malaria prevalence and evaluate the knowledge of prescribers in Lagos State regarding WHO standards for ACT prescriptions. The study employed a cross-sectional survey design, combining laboratory testing for malaria prevalence among 2,720 patients and a structured questionnaire to assess the knowledge of 21 prescribers. Rapid diagnostic test kits were used to confirm malaria infections, while data collected were analyzed using SPSS version 26 and presented as counts and frequencies. Findings indicated that ACTs were the most commonly prescribed treatment for uncomplicated *Plasmodium falciparum*, aligning with WHO guidelines. Prescribed dosage forms included intramuscular injections, oral tablets, and pediatric suspensions. A significant proportion of prescribers (66.7%) demonstrated good knowledge of ACTs, highlighting progress in clinical awareness. However, gaps in adherence to WHO standards were also noted, underscoring the need for enhanced training and policy enforcement. This study emphasizes the importance of ongoing education for healthcare providers to ensure compliance with WHO diagnostic and treatment protocols. Improving prescriber knowledge and adherence to these guidelines is critical for reducing malaria prevalence and improving patient outcomes in Nigeria.

Keywords: Malaria prevalence, Artemisinin Combination Therapy, Knowledge, Guidelines, Nigeria

Introduction

Nigeria bears the world’s heaviest malaria burden, with approximately 51 million cases and 207,000 deaths reported annually. This accounts for roughly 30% of the total malaria burden in Africa, highlighting the severity of the problem (WHO, 2014). An estimated 97% of Nigeria's population, approximately 173 million people, is at risk of infection. Malaria also contributes to 60% of outpatient visits to hospitals and plays a significant role in maternal and child mortality, causing approximately 11% of maternal deaths and 30% of child mortality, particularly among children under the age of five (WHO, 2014). This staggering prevalence has devastating implications for both public health and the nation's economic productivity. The primary causative

agent of malaria in Nigeria is *Plasmodium falciparum*, a parasite transmitted through the bites of infected female *Anopheles* mosquitoes. Among the major vectors responsible for year-round transmission are *Anopheles gambiae*, *Anopheles funestus*, *Anopheles arabiensis*, and *Anopheles moucheti*. To combat this public health challenge, the Nigerian government adopted Artemisinin-based Combination Therapies (ACTs) as the recommended treatment protocol in 2004. Artemether-lumefantrine (AL) and Artesunate-Amodiaquine (AS + AQ) are the primary ACT regimens in use (Kar et al., 2014). However, despite these measures, malaria continues to strain Nigeria's healthcare system and hinder its economic development. The financial toll of malaria is immense, with an estimated monetary loss of 132 billion Naira (~700 million USD) annually due to treatment costs, prevention, and other indirect expenses (WHO, 2012).

Malaria is a medical emergency that demands prompt and accurate diagnosis for effective management. Delays in diagnosis and treatment are among the leading causes of mortality, particularly in regions where healthcare systems are overburdened or lack the necessary resources. Diagnostic challenges are exacerbated in areas where malaria is less common, as healthcare providers may be unfamiliar with the disease. This unfamiliarity often leads to missed or delayed diagnoses, with clinicians failing to consider malaria as a potential diagnosis and omitting the necessary diagnostic tests (Tangpukdee et al., 2009). Laboratory technicians, who play a critical role in detecting parasites in blood smears, may lack the expertise or training needed to identify malaria accurately. In high-transmission areas, such as sub-Saharan Africa, a significant proportion of the population may harbor *Plasmodium* parasites without showing symptoms. These asymptomatic carriers develop partial immunity that protects them from illness but not infection.

This situation complicates malaria diagnosis, as the presence of parasites in a symptomatic individual does not necessarily mean the illness is caused by malaria (Adebowale, 2020). These diagnostic complexities are compounded by limited resources in malaria-endemic regions, where healthcare personnel are often undertrained, underpaid, and underequipped. The burden of excessive patient loads forces health workers to divide their attention between malaria and other severe infectious diseases such as tuberculosis and HIV/AIDS (Tangpukdee et al., 2009). These systemic shortcomings contribute to the high prevalence of malaria in Nigeria.

Despite the widespread documentation of malaria's impact across Nigeria, there remains a dearth of research focused on prescribers' knowledge and adherence to treatment guidelines, particularly in Lagos State. Lagos, as a densely populated urban hub, presents unique challenges in malaria management. Understanding prescribers' knowledge and practices in this region is essential for identifying gaps in the healthcare system and implementing effective control measures. Previous studies (Oche et al., 2012) have highlighted the high prevalence of malaria across the country, but few have examined the specific role of healthcare providers in mitigating or exacerbating the problem. Prescribers play a pivotal role in malaria management, as their decisions directly influence treatment efficacy and patient outcomes. Adherence to World Health Organization (WHO) guidelines for ACT usage is critical to ensuring that malaria is treated effectively. However, studies suggest that a lack of knowledge among prescribers regarding these guidelines remains a significant barrier to optimal treatment (Tangpukdee et al., 2009). Addressing this knowledge gap is crucial for improving malaria control efforts and reducing the burden of the disease in Nigeria.

Effective malaria control requires a multifaceted approach that includes accurate diagnosis, appropriate treatment, vector control, and community engagement. The participation of targeted communities is a cardinal tool for the success and sustainability of disease control programs (Ekeh et al., 1988). Community involvement ensures that interventions are culturally appropriate and widely accepted, which enhances their impact. Similarly, healthcare providers must be adequately trained and supported to deliver high-quality care. Without these elements, malaria control efforts are unlikely to achieve lasting success. The World Health Organization emphasizes the importance of ACTs in treating uncomplicated *P. falciparum* malaria. These therapies combine fast-acting artemisinin derivatives with longer-lasting partner drugs, offering a highly effective treatment option. However, the effectiveness of ACTs depends on their appropriate use, which requires prescribers to have a thorough understanding of WHO standards and guidelines. Non-compliance with these guidelines can lead to treatment failure, drug resistance, and an increased burden of malaria in the community. This study aims to address the gaps in knowledge and practice among prescribers in Lagos State by assessing their adherence to WHO guidelines for ACT use. Additionally, it seeks to determine the prevalence of malaria in the study population and identify factors that may influence prescribers' decision-making processes. By focusing on Lagos State, the study provides valuable insights into the challenges and opportunities for improving malaria management in one of Nigeria's most populous regions.

The findings of this study have significant implications for public health policy and practice. Understanding the knowledge levels and prescription patterns of healthcare providers can inform targeted interventions to enhance adherence to WHO guidelines. These interventions may include

training programs, policy reforms, and increased resource allocation to support healthcare providers in delivering effective malaria care. Malaria remains a leading cause of morbidity and mortality in Nigeria, with far-reaching consequences for public health and economic development. Addressing the challenges associated with diagnosis, treatment, and healthcare provider knowledge is essential for reducing the burden of this disease. This study contributes to these efforts by evaluating malaria prevalence and prescriber knowledge in Lagos State, offering a foundation for more effective and sustainable malaria control strategies.

Methods

A cross-sectional study design was adopted to evaluate prescription knowledge and practices related to Artemisinin-based Combination Therapies (ACTs) among physicians. Data collection was conducted from June to August 2021, utilizing prescriptions obtained from pharmacy departments in 26 private medical facilities. These prescriptions served as a basis for assessing the attitudes and expertise of physicians regarding ACTs. To further evaluate their knowledge, structured questionnaires were distributed to practicing physicians within the selected facilities. Data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 26. To determine malaria prevalence, Rapid Diagnostic Test (RDT) kits were employed alongside microscopic examination of blood samples. The microscopic method involved preparing thick and thin blood films to detect malaria parasites. Blood samples were obtained by pricking the fingers of participants using a sterile lancet after cleaning the fingertip with 70% ethyl alcohol. Two drops of blood were placed onto a clean glass slide, and the thick blood film was prepared by gently spreading the blood in a circular motion. Care was taken to avoid over-thickening, and the sample was left to air-dry without using a fixative.

Once dried, the blood film was stained with diluted Giemsa stain for 20 minutes and subsequently rinsed with buffered water for 3 minutes. The slide was allowed to air-dry in a vertical position and examined under a light microscope for the presence of malaria parasites. This technique allowed for the identification of *Plasmodium* species, including *Plasmodium falciparum*. RDTs were performed using the Bioline Malaria Ag test kit to complement the microscopic findings. A blood sample was applied to the test card, pre-treated with diluted Giemsa reagent. After 15 minutes, specific bands on the test card indicated the presence of *Plasmodium falciparum* or other human malaria species. Observations were verified using laboratory positive controls containing *P. falciparum* to ensure accuracy.

This combined approach of questionnaire-based assessment, RDT, and microscopic diagnosis provided a comprehensive evaluation of both malaria prevalence and physician knowledge related to ACTs. The methods employed ensured reliable data collection and analysis to inform strategies for improving malaria diagnosis and treatment practices.

Results

A total of 2,720 prescribed cases of malaria with various antimalarial drugs, including Artemisinin-based combination therapy (ACT), were collected. The number of female patients was 1,397 (51.36%), while that of male patients was 1,160 (42.65%). This prescription included all age groups of patients who visited the various hospitals from March 2020 to July 2021.

Table 1: Patients' demographic data

Gender	**Observation**	Percentage

Male	1160	42.65%
Female	1397	51.36%
Age group		
0-10	337	12.39%
11-20	530	19.49%
21-30	820	30.45%
31-40	290	10.66%
41-50	541	19.89%
>50	202	7.43%

Table 1 shows the frequency distribution of the total number of patients with antimalarial prescriptions. The highest value was in the age group 21-30 (30.45%), while the age group above 50 years had the lowest prescription of antimalarials (7.43%).

Prescribed ACT- antimalarial agents

The various antimalarials prescribed for these patients are indicated in Table 2.

Table 2: Prescribed ACT- antimalarial agents

Antimalarial drug	Dosage form	Quantity	Percentage
sulfadoxine/pyrimethamine	Tablet	579	21.00%
Artesunate	Tablet	147	5.00%
Artemether+Lumefantrine	Tablet/Syrup	1305	47.33%
I.M Artemether	Injection	172	6.24%
I.M Artesunate	Injection	87	3.16%
Dihydroartemisinin-Piperaquine	Tablet	151	5.48%
Artesunate-Mefloquine	Tablet	26	0.94%
Artesunate-Amodiaquine	Tablet	23	0.83%
Artesunate-Pyronaridine	Tablet	0	0.00%
Artesunate+ SP	Tablet	110	3.99%
Artemether+Lumefantrine+ SP	Tablet	157	5.69%

ACT antimalaria was mostly prescribed based on the WHO guidelines for treating uncomplicated *P. falciparum.* The various dosage forms observed were IM injections, tablet forms, and some paediatric suspensions.

Discussion

The study revealed that female patients (51.36%) experienced more malaria episodes than male patients (42.65%). This gender disparity in malaria prevalence is consistent with WHO (2018), which also reported higher malaria prevalence among women compared to men. Among age groups, the highest malaria prevalence was observed in individuals aged 21–30 years (30.45%), which aligns with findings by Isiko et al., (2024). In addition to Artemisinin-based Combination Therapies (ACTs), sulphadoxine-pyrimethamine was frequently prescribed (21.00%), particularly as a prophylactic measure in antenatal care. Artemether-Lumefantrine emerged as the most commonly prescribed ACT, accounting for 47.33% of prescriptions. Commonly used brands included Coartem, Lonart, and Amatem Forte, offered in tablet, dispersible, or suspension forms. The general acceptability, availability, and fewer side effects of these drugs likely contribute to their widespread use, a finding supported by Isiko et al., (2024).

Less commonly prescribed antimalarials included Artesunate monotherapy (5.00%), intramuscular Artemether (6.24%), and intramuscular Artesunate (3.16%). Dihydroartemisinin-piperaquine accounted for 5.48% of prescriptions, while Artesunate-mefloquine and Artesunate-amodiaquine combinations were rarely prescribed, with frequencies of 0.94% and 0.83%, respectively. Artesunate-pyronaridine was not prescribed due to its unavailability. These trends are consistent with the findings of Ayogu et al., (2015), who also noted regional variations in prescription practices based on drug availability. Antibiotics were commonly co-prescribed with ACTs to enhance treatment outcomes and ensure complete parasite clearance (WHO, 2018). Ciprofloxacin (23.31%) and azithromycin (17.48%) were the most frequently prescribed antibiotics.

Ciprofloxacin's popularity is attributed to its synergistic effects when combined with antimalarials such as Artesunate, Artemether-Lumefantrine, and Artesunate-amodiaquine. This aligns with findings by Ayogu et al., (2015), who highlighted its benefits in managing *Plasmodium falciparum* infections and co-infections like salmonellosis.

Azithromycin, primarily used for respiratory infections, has demonstrated activity against plasmodia in vitro, animal models, and clinical studies (Van Eijk, 2011). Notably, Dunne (2005) found promising results when azithromycin was combined with chloroquine, further supporting its potential in malaria treatment. Multivitamins, including folic acid, ferrous sulphate, calcium, and vitamin B complex were prescribed in 21.54% of cases, while analgesics were prescribed in 37.17% of cases to manage malaria-associated fever and pain. The widespread use of analgesics aligns with WHO guidelines, which recommend paracetamol, ibuprofen, and tepid sponging for managing fever in malaria (WHO, 2006). Paracetamol, as the most commonly used antipyretic, has been shown to effectively manage fever without inhibiting immune responses.

The study assessed prescribers' knowledge of ACTs as the first-line treatment for uncomplicated *Plasmodium falciparum* malaria. The findings revealed that many practicing physicians, especially those within their first five years of practice, demonstrated good knowledge of ACTs and WHO guidelines. Among the 21 respondents, 57.1% had 10–15 years of experience, and 38.1% had 6–10 years. Most prescribers understood that ACTs combine two pharmacologically active agents to enhance efficacy and reduce resistance. Physicians cited reasons for prescribing ACTs, including their WHO endorsement, effectiveness in parasite clearance, safety, affordability, and ability to overcome chloroquine resistance. Regarding diagnostic methods, 71.4% of prescribers adhered to confirmatory testing with microscopy or Rapid Diagnostic Tests (RDTs) before prescribing ACTs.

Among diagnostic approaches, 38.1% relied on a combination of clinical symptoms, microscopy, and RDTs, while 28.6% used clinical symptoms and microscopy alone. These findings align with Isiko et al., (2024), who reported similar practices among prescribers in Nigeria.

The study also examined patient requests for alternative antimalarials. Approximately 18.8% of prescribers reported that patients requested quinine, while 12.5% observed demands for chloroquine. While 61.1% of prescribers counseled patients on the necessity of ACTs, 27.8% acceded to patient demands, and 11.1% did not provide counseling. Adverse effects of ACTs were reported by 19% of prescribers and included symptoms such as nausea, dizziness, and rashes. The remaining 81% reported no significant adverse effects. These findings align with those of Akande & Ologe (2007), who documented similar outcomes in secondary health facilities in Ilorin, Nigeria. The study revealed gaps in knowledge regarding WHO-accredited microscopists, with only 66.7% of prescribers aware of their role. Most respondents (85.7%) preferred prescribing Artemether-Lumefantrine, while 14.3% opted for Dihydroartemisinin-piperaquine. Dosage forms varied based on patient age and weight, with 38.1% of respondents favoring intramuscular injections over oral formulations.

Conclusion

This study highlights the widespread use of ACTs, particularly Artemether-Lumefantrine, as the first-line treatment for uncomplicated malaria in Lagos State. While prescribers demonstrated good knowledge of ACTs and adherence to WHO guidelines, gaps remain in diagnostic practices and awareness of WHO-accredited microscopists. To address these gaps, healthcare providers

must receive additional training on malaria diagnosis and treatment protocols. Policymakers should also prioritize improving access to diagnostic tools and enhancing public awareness of ACT efficacy. By ensuring accurate diagnoses and consistent adherence to treatment guidelines, the burden of malaria in Nigeria can be significantly reduced.

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Author's contributions

Efejene IO conceptualized the study and initial draft; Etim JJ did the data analysis; Ibu JM did the corrections and reviews; Ekpo EI was involved in the reviews; Otali CC was involved in the supervision of the research; Etim-John, OJ was involved in data curation; Agbiji NN took part in proofreading the manuscript; Idem IE was involved in the methodology.

Conflict of interest declaration

No conflict of interest was declared.

Ethical consideration declaration

Administrative and ethical approval was sought and obtained from the College of Medicine of the University of Lagos health research ethics committee with reference number; CMUL/HREC/0918/19.

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References

Adebowale, N. (2020). Nigeria records more deaths from other diseases than COVID-19-SGF. *Nigerian Journal of Malaria Studies*, 2 (8), 1-30.

Ayogu, E. E., Ugwuowo, O., Amorha, K. C., & Okonta, J. M. (2015). Evaluation of ciprofloxacin effect on the antimalarial activity of some antimalarial drugs in plasmodium berghei infected mice. *International Journal of physiological Science Research*, 9, 1896-1903.

Dunne, M. W., Singh, N., & Shukla, M. (2005). A multicenter study of azithromycin, alone and in combination with chloroquine, for the treatment of acute uncomplicated *Plasmodium falciparum* malaria in India. *Journal of Infectious Diseases,* 191 (10), 1582–1588.

Ekeh, H. E., & Adeniyi, J. D. (1988). Health education strategies for tropical disease control in school children. *Journal of Tropical Medicine and Hygiene*, 91, 55–59.

Isiko, I., Nyegenye, S., Mwesigwa, A. *et al.* (2024). Determinants of malaria spread among under-five children in Nigeria: results from a 2021 Nigerian malaria indicator cross-sectional survey. *BMC Pediatrics,* 24, 646. https://doi.org/10.1186/s12887-024-05135-w

Kar, N. P., Kumar, A., Singh, O. P., Carlton, J. M., & Nanda, N. (2014). A review of malaria transmission dynamics in forest ecosystems. *Parasites and Vectors,* 7, 265. doi: 10.1186/1756-3305-7-265.

Lell, B., Sovric, M., Schmid, D., Luckner, D., Herbich, K., & Long, H. Y. (2001). Effect of antipyretic drugs in children with malaria. *Clinical Infectious Diseases,* 32 (5), 838-841.

Matsiegui, P. B., Missinou, M. A., Necek, M., Mavoungou, E., Issifou, S., & Lell, B. (2008). Antipyretic effect of ibuprofen in Gabonese children with uncomplicated falciparum malaria: a randomized, double-blind, placebo-controlled trial. *Malaria Journal,* 2 (7), 91.

Oche, A. O., & Aminu, M. (2012). The prevalence of malarial parasitaemia among blood donors in Ahmadu Bello University Teaching Hospital, Shika, Zaria, Nigeria. *Nigerian Journal of Medicine*, 21, 445–449.

Tangpukdee, N., Duangdee, C., Wilairatana, P., & Krudsood, S. (2009). Malaria diagnosis: A brief review. *The Korean Journal of Parasitology*, *47*(2), 93–102. https://doi.org/10.3347/kjp.2009.47.2.93

Van-Eijk, A. M., & Terlouw, D. J. (2011). Azithromycin for treating uncomplicated malaria. *Cochrane Database Systematic Review,* 2, CD006688.

WHO (2006). World Health Organization Guidelines for the treatment of malaria. Geneva. ISBN 92-4-154694-8

WHO (2012). Progress and impact series: Focus on Nigeria. Geneva: World Health Organization.

WHO (2014). World malaria report 2014 by World Health Organization. Geneva.

WHO (2018). Artemisinin and artemisinin-based combination therapy resistance: Status report. Accessed on 13th January, 2021 at https://apps.who.int/iris/handle/10665/5521

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Efegene, Ofejiro Israel holds a bachelor's degree in Pharmacology from Delta State University, Abraka with a research on the effect of herbicide garri on haematological parameters and a master's degree from the University of Lagos, with a thesis on the evaluation of antibiotics and analysis of ciprofloxacin and gentamycin residue in fish sample. He is presently undergoing his doctoral program in pharmacology at the DELSU joint Canada-Israel Neuroscience and Biopsychiatric Laboratory, Department of Pharmacology with a keen interest in the impacts of drugs on prenatal depression. He presently teaches, researches and supervises pharmacology to several students at the College of Medical and Health Sciences of Novena University, He has served as a course adviser, departmental examination officer, and CCMAS 30% course committee member. He has attended several scientific conferences in which his abstract has been published in several books of abstract. He has published several research articles in both local and international reputable journals. He is keen to grow his research interest in neuroscience, antimicrobials and public health with also basic skills in the analysis and interpretation of data.

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