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Antibiotic and Antimalarial Self-Medication Among Community Pharmacy Clients in the Niger Delta: A Stewardship and Antimicrobial Resistance Perspective

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Abstract- ***Background: Self-medication with antimicrobial agents is a well-recognised driver of antimicrobial resistance (AMR), a risk that is amplified in low- and middle-income countries where regulatory oversight of prescription-only medicines remains limited. Community pharmacies, although intended to function as gatekeepers of rational medicine use, may inadvertently serve as an unsupervised supply channel for antimicrobial agents. Objective: This study sought to quantify the prevalence and pattern of antibiotic and antimalarial self-medication among community pharmacy clients in Yenagoa Local Government Area (LGA), Bayelsa State, Nigeria, and to interpret these findings within an antimicrobial stewardship framework. Methods: A cross-sectional descriptive survey was undertaken among 554 adult community pharmacy clients, recruited through stratified random sampling and assessed using a structured, interviewer-administered questionnaire. Data pertaining to self-medicated drug categories, indications, knowledge of self-medication and its consequences, and sources of information were analysed descriptively. Results: Overall, 59.0% of respondents (327/554) reported having self-medicated within the preceding six months. Antibiotics (13.5%) and antimalarials (10.1%) constituted the second- and third-most frequently self-medicated drug categories, surpassed only by sexual enhancement products (30.9%). Infection (16.5%) and malaria/fever (13.1%) were, respectively, the second- and fourth-most commonly reported indications. Notably, 82.1% of respondents correctly identified that self-medication may precipitate adverse drug reactions, drug interactions and antimicrobial resistance, while 85.4% recognised the danger of altering medication dosage without professional consultation — findings that indicate awareness of AMR-related risk without a corresponding change in behaviour. Social media (33.9%) and personal knowledge (31.5%) were the principal sources of information underpinning self-medication, with a doctor or pharmacist cited as the information source in only 17.4% of instances. Conclusion: A substantial minority of community pharmacy clients in this Niger Delta population self-medicate with antibiotics and antimalarials despite widespread awareness of AMR-related risk, suggesting that this behaviour reflects an awareness-behaviour gap rather than a knowledge deficit. These findings lend support to pharmacy-level antimicrobial stewardship interventions, dispensing-point restrictions on antibiotic sales, and the design of behavioural, rather than purely educational, interventions.***

Keywords: antibiotic self-medication; antimalarial; antimicrobial resistance; community pharmacy; stewardship; Nigeria

I. INTRODUCTION

Antimicrobial resistance (AMR) constitutes one of the foremost global public health threats of the present decade, implicated directly in an estimated 1.27 million deaths and associated with a further 4.95 million deaths worldwide in 2019 (Ikuta et al., as cited in Bustanji et al., 2024; Aljeldah, 2022). Self-medication with antibiotics is a well-established contributor to this burden, particularly within low- and middle-income countries (LMICs), where antibiotics remain widely accessible over the counter despite their prescription-only status, and where weak regulatory enforcement, the proliferation of informal drug outlets, and constrained healthcare access converge to normalise unsupervised antimicrobial use (Torres et al., 2019). Reported prevalence of antibiotic self-medication across African settings varies considerably, ranging from approximately 12% to more than 90%, with West Africa recording among the highest regional rates (Torres et al., 2019).

Nigeria exemplifies this pattern with particular clarity. National and sub-national surveys report antibiotic self-medication prevalence ranging from approximately 46% among the general adult population of Abia State (Izuka et al., 2024) to 47.7% among tertiary-education graduates nationally, with amoxicillin, metronidazole and ciprofloxacin identified as the most frequently self-administered agents, and with academic attainment conferring no discernible protective effect against the behaviour (Popoola et al., 2024). Antimalarial self-medication compounds this concern in malaria-endemic regions such as the Niger Delta, where inappropriate antimalarial use risks masking febrile illness of alternative aetiology, encourages partial or substandard dosing, and contributes to the emergence of antimalarial drug resistance in parallel with antibiotic resistance (Bassi et al., 2021).

A cross-sectional survey of self-medication practice among community pharmacy clients in Yenagoa LGA, Bayelsa State, generated data in which antibiotics and antimalarials emerged as the second- and third-most frequently self-medicated drug categories overall. Rather than treating this finding as a single data point within a broader knowledge-attitude-practice inventory, the present paper isolates it for focused analysis and interprets it explicitly through an antimicrobial stewardship lens, examining whether self-medication with these agents reflects a genuine knowledge deficit or, as emerging evidence from other Nigerian settings suggests (Popoola et al., 2024), a disjunction between documented AMR awareness and actual purchasing behaviour. This distinction carries direct implications for intervention design: a knowledge deficit would warrant educational campaigns, whereas an awareness-behaviour gap instead demands structural and point-of-sale interventions.

II. METHODS

2.1 Design, Setting and Population

This paper presents a focused secondary analysis of a cross-sectional descriptive study conducted among clients of community pharmacies in Yenagoa LGA, Bayelsa State, Nigeria, between February and July 2024. Eligible participants comprised adults aged 18 years or older who had self-medicated at least once within the preceding year; healthcare professionals were excluded from participation in order to mitigate professional-knowledge bias.

2.2 Sampling

The minimum required sample size (n = 400) was determined using the Yamane (1967) formula, applied to a finite population of 524,400 pharmacy clients at a 95% confidence level and a 5% margin of error. A stratified random sampling technique, stratified by age, gender and socioeconomic status, yielded 554 completed responses, representing a 100% response rate.

2.3 Instrument and Variables

A structured, pilot-tested and supervisor-validated questionnaire captured socio-demographic characteristics; knowledge of the concept of self-medication and its consequences (assessed via yes/no/don't know items); drug categories and indications for self-medication; and sources of information. For the purposes of this analysis, responses pertaining specifically to antibiotics and antimalarials, together with the AMR-relevant knowledge items, were extracted for focused interpretation.

2.4 Data Analysis

Descriptive statistics, comprising frequencies and percentages, were used to characterise drug category use, indications, knowledge items and information sources. Data are reported for the full sample (N = 554) with respect to knowledge items, and for the self-medicating subgroup (n = 327) with respect to practice-specific items.

III. RESULTS

3.1 Prevalence of Antibiotic and Antimalarial Self-Medication

Among the 327 respondents (59.0% of the total sample) who reported self-medicating within the preceding six months, antibiotics accounted for 13.5% and antimalarials for 10.1% of self-medicated drug categories, positioning them as the second- and third-most frequently self-medicated categories,

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behind sexual enhancement products (30.9%) and ahead of analgesics (8.6%).

Table 1. Antimicrobial-relevant self-medication categories and indications (n = 327)

Category / Indication	Proportion (%)
Antibiotics (drug category)	13.5
Antimalarials (drug category)	10.1
Infection (indication)	16.5
Malaria and fever (indication)	13.1

3.2 Knowledge of Self-Medication Consequences (N = 554)

Table 2. Selected knowledge items relevant to antimicrobial resistance risk

Knowledge item	Yes (%)	No (%)	Don't know (%)
Self-medication can cause adverse drug reactions, drug interactions, and antimicrobial resistance	82.1	12.1	5.8
Increasing/decreasing medication dose without consultation can be dangerous	85.4	8.1	6.5
Self-medication can delay diagnosis and treatment of serious disease	86.5	9.6	4.0
Self-medication can reduce effectiveness of prescribed medications	84.5	12.1	3.4

Despite this substantial level of documented awareness of AMR-relevant risk, 78.3% of the full sample nevertheless demonstrated poor knowledge of the basic concept of self-medication itself, and antibiotics and antimalarials remained, respectively, the second- and third-most self-medicated drug categories in practice. This apparent contradiction — between conceptual awareness of risk and continued high-risk practice — forms the empirical basis for the awareness-behaviour distinction developed in the Discussion below.

3.3 Information Sources

Among respondents who self-medicated, social media (33.9%) and personal knowledge (31.5%) constituted the leading sources of information, followed by friends or relatives (17.1%); only 17.4% of respondents reported that a doctor or pharmacist had been involved in the decision to self-medicate, indicating that antibiotic and antimalarial self-medication in this population occurs largely outside professional oversight.

3.4 Frequency and Reasons

Among self-medicating respondents, 38.5% had self-medicated more than three times within the preceding six months. The most frequently cited reasons were the need for quick relief (27.9%) and the desire to save money (31.2%), consistent with evidence from elsewhere in Nigeria indicating that barriers to healthcare access and cost, rather than indifference to risk, are principal drivers of antimicrobial self-medication (Bassi et al., 2021; Popoola et al., 2024).

IV. DISCUSSION

This analysis demonstrates that antibiotic and antimalarial self-medication are prevalent among community pharmacy clients in Yenagoa LGA, positioned immediately behind sexual enhancement products as the most frequently self-medicated drug categories, and that this pattern persists despite high documented awareness (82–87%) of precisely those risks — adverse drug reactions, drug interactions, antimicrobial resistance, delayed diagnosis and

reduced treatment efficacy — that antimicrobial stewardship programmes are designed to avert. This pattern is consistent with the broader national picture: in a nationwide survey of Nigerian tertiary-education graduates, 47.7% self-medicated with antibiotics despite widespread AMR awareness, with academic background exerting no statistically significant protective effect (Popoola et al., 2024), while in Abia State, antibiotic self-medication prevalence approached half of the adult population despite comparable levels of awareness (Izuka et al., 2024). Considered alongside the present findings, this constitutes converging evidence that antibiotic self-medication in Nigeria is substantially an awareness-behaviour gap rather than a pure knowledge deficit — a distinction that carries material implications for the design of future interventions.

This distinction merits closer theoretical scrutiny. Models of health behaviour that assume a broadly linear relationship between knowledge and practice — in which awareness functions as a sufficient condition for behaviour change — are difficult to reconcile with the present data, in which awareness of AMR-relevant risk exceeded 80% yet self-medication with antibiotics and antimalarials remained common. A more plausible explanation, consistent with structural and access-based accounts of self-medication in LMIC settings (Torres et al., 2019), is that self-medication functions here as a rational, if clinically suboptimal, response to constrained healthcare access, cost pressures and the ready availability of antimicrobials outside formal prescribing pathways. If awareness were indeed the binding constraint on behaviour, educational campaigns emphasising AMR risk would be expected to produce a measurable reduction in self-medication; the present findings, together with comparable Nigerian evidence, suggest that such campaigns, while necessary, are unlikely on their own to be sufficient.

Structural and point-of-sale interventions appear better positioned to close this gap. These might include enforced prescription-only dispensing of antibiotics at the community pharmacy and patent medicine vendor level (Torres et al., 2019); pharmacist-led brief-intervention and triage protocols that redirect self-diagnosed infections and febrile illness toward diagnostic confirmation prior to antimicrobial dispensing; and the formal integration of community pharmacies into national AMR stewardship and surveillance frameworks, consistent with the stated aims of Nigeria's Antimicrobial Resistance National Action Plan, which seeks to strengthen stewardship policy governing antimicrobial procurement, distribution, prescription, sale and use (Nigeria Centre for Disease Control, as cited in the Nigerian pharmacy stewardship literature).

The dominance of social media and personal knowledge — rather than pharmacist advice — as information sources for this behaviour is, in itself, an actionable and somewhat under-appreciated finding. It suggests that antimicrobial stewardship messaging confined to the clinical encounter is likely to have limited reach in this setting, and that engagement with informal information channels — including social media content moderation, community-level messaging, and pharmacist-initiated rather than purely client-initiated counselling at the point of sale — may be necessary to intercept antibiotic and antimalarial self-medication before it occurs, rather than merely responding to it after the fact.

The co-occurrence of antimalarial self-medication alongside antibiotic self-medication warrants particular attention in this malaria-endemic Niger Delta setting. Undiagnosed or partially treated febrile illness may reflect bacterial rather than parasitic aetiology, such that antimalarial self-medication in the absence of diagnostic confirmation risks a dual harm: masking bacterial infection that requires antibiotic treatment, while simultaneously exerting selection pressure that contributes to antimalarial resistance. This dual risk pathway, in which two distinct resistance phenomena may arise from a single undiagnosed episode of febrile illness, has received comparatively little attention relative to the substantial literature on antibiotic-specific stewardship, and merits further prospective investigation.

4.1 Limitations

This analysis is subject to several limitations. It is based on cross-sectional, self-reported data drawn from a single LGA, such that recall bias and social desirability bias cannot be excluded, and causal inference is not possible. The parent instrument did not verify the specific antibiotic or antimalarial agents used, treatment duration, or whether treatment courses were completed — variables of direct relevance to resistance risk that should be captured in future stewardship-focused instruments. Furthermore, the knowledge items analysed here reflect general self-medication knowledge rather than antimicrobial-specific knowledge scales, and may therefore understate or overstate true AMR literacy within this population.

V. CONCLUSION AND RECOMMENDATIONS

Antibiotic and antimalarial self-medication are prevalent among community pharmacy clients in Yenagoa LGA despite high documented awareness of antimicrobial resistance-related risk, indicating that this behaviour is driven predominantly by access, cost and informal information channels rather than by ignorance of its consequences. On this basis, we recommend: (i) stricter enforcement of prescription-only dispensing of antibiotics at the community pharmacy and patent medicine vendor level; (ii) formal integration of community pharmacists into antimicrobial stewardship and surveillance activity, supported by brief-intervention training for point-of-sale triage; (iii) diagnostic-linked dispensing protocols — for example, rapid diagnostic test-linked antimalarial dispensing — to reduce undifferentiated self-treatment of febrile illness; and (iv) the delivery of stewardship messaging through the social media channels that respondents actually use, rather than reliance on clinical-encounter education alone.

VI. CONTRIBUTION TO KNOWLEDGE

Much of the existing Nigerian and West African self-medication literature reports antibiotic and antimalarial self-medication as isolated items within broad knowledge-attitude-practice inventories, without interrogating whether documented AMR awareness translates into safer purchasing behaviour. This study addresses that gap by isolating antibiotic and antimalarial self-medication data from a community pharmacy client population and interpreting them explicitly through an antimicrobial stewardship lens. In so doing, it provides empirical evidence that self-medication with these agents in this Niger Delta setting reflects an awareness-behaviour gap rather than a knowledge deficit — a distinction not previously well established for this population, and one with direct implications for whether future interventions should be primarily educational or structural in design. The study further identifies a previously under-examined dual risk pathway arising from the co-occurrence of antimalarial and antibiotic self-medication in a malaria-endemic setting, whereby a single episode of undiagnosed febrile illness may simultaneously mask bacterial infection and contribute to antimalarial resistance selection pressure. Finally, by documenting social media and personal knowledge — rather than pharmacist or physician advice — as the dominant information sources underlying this behaviour, the study contributes evidence that antimicrobial stewardship messaging confined to clinical encounters is unlikely to be sufficient, and supports a shift toward point-of-sale, structural and social-media-engaged intervention strategies at the community pharmacy level.

Conflict of Interest

The authors declare that they have no conflict of interest, financial or otherwise, in relation to the research, authorship, and/or publication of this article.

REFERENCES

[1] Akande-Sholabi, W., Ajamu, A. T., & Adisa, R. (2021). Prevalence, knowledge and perception of self-medication practice among undergraduate healthcare students. Journal of Pharmaceutical Policy and Practice, 14, 49.

[2] Aljeldah, M. M. (2022). Antimicrobial resistance and its spread is a global threat. Antibiotics, 11(8), 1082.

[3] Bassi, P. U., Osakwe, A. I., Builders, M., Ettebong, E., Kola, G., Binga, B., & Oreagba,

I. (2021). Prevalence and determinants of self-medication practices among Nigerians. African Journal of Health Sciences, 34(5), 634–647.

[4] Bustanji, Y., Taneera, J., Bargooth, A., Abuhelwa, A., Issa, A., El-Huneidi, W., Abu-Gharbieh, E., Alzoubi, K. H., Alqudah, M. A. Y., Alhusban, A., Hamad, I., Faris, M. E., & Semreen, M. H. (2024). Exploring the global landscape of self-medication among students: Trends, risks, and recommendations for safe and responsible practices. Pharmacy Practice, 22(1), 2928.

[5] Izuka, M. O., et al. (2024). Prevalence and pattern of self-medication with antibiotics among residents of Abia State, Southeastern Nigeria: A call for action. International Journal of Community Medicine and Public Health.

[6] Popoola, A., et al. (2024). A national survey of the antibiotic use, self-medication practices, and knowledge of antibiotic resistance among graduates of tertiary institutions in Nigeria. Scientific African.

[7] Torres, N. F., Chibi, B., Middleton, L. E., Solomon, V. P., & Mashamba-Thompson, T. P. (2019). Evidence of factors influencing self-medication with antibiotics in low- and middle-income countries: A systematic scoping review. Public Health, 168, 92–101.

[8] World Health Organization. (1998). The role of the pharmacist in self-care and self-medication. WHO/DAP/98.13. Geneva: World Health Organization.

[9] Yamane, T. (1967). Statistics: An introductory analysis (2nd ed.). New York: Harper and Row.