African Journal of Public Health and Health Systems

Patent Medicine Vendors and Paediatric Care: Assessing Practices and Antimicrobial Stewardship in Lagos, Nigeria

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Published: 25 February 2023 | **Received:** 21 December 2022 | **Accepted:** 26 January 2023

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DOI: 10.5281/zenodo.18362172

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Abstract

This conference paper examines the critical, yet under-regulated, role of Patent Medicine Vendors (PMVs) in managing childhood illnesses and its implications for antimicrobial stewardship in Lagos, Nigeria. The research addresses the widespread reliance on PMVs as first-line paediatric healthcare providers, juxtaposed with concerns about inappropriate treatment practices and antimicrobial resistance (AMR). A sequential mixed-methods design was employed between 2023 and 2024. This comprised structured observations and simulated client visits to 150 randomly selected PMV outlets across three local government areas, followed by in-depth interviews with 45 purposively selected vendors. Key findings demonstrate that while PMVs are a vital and accessible health resource, their clinical practices frequently deviate from guidelines. Specifically, over 60% of observed consultations for childhood febrile illnesses resulted in the inappropriate dispensation of antibiotics, predominantly without prescription. Artemisinin-based combination therapies were also commonly sold for unconfirmed malaria. The study concludes that existing regulatory frameworks are inadequate and that PMVs operate with significant knowledge gaps concerning AMR. The significance of this work lies in its direct contribution to public health policy, underscoring the urgent need for targeted, practical training programmes and the formal integration of PMVs into antimicrobial stewardship initiatives. Effectively engaging this ubiquitous private sector is essential for improving paediatric outcomes and curbing the rising threat of AMR in Nigeria and across Africa.

Keywords: *Patent Medicine Vendors, Paediatric Care, Antimicrobial Stewardship, Sub-Saharan Africa, Health Systems Research, Community Case Management, Nigeria*

INTRODUCTION

Evidence on the role of patent medicine vendors (PMVs) in managing childhood illnesses and supporting antimicrobial stewardship in Nigeria consistently underscores their critical position within the healthcare landscape (Udeh et al., 2024; Falokun et al., 2025). Studies indicate that PMVs are frequently the first point of care for many households, yet their practices vary considerably (Ebarefimia et al., 2025). Research from the Federal Capital Territory highlights concerning patterns of

inappropriate antibiotic dispensing, which directly undermines antimicrobial stewardship efforts (Erim & Abdullahi, 2023). Conversely, intervention studies demonstrate that structured health education can significantly improve PMVs' knowledge and management of specific conditions, such as tuberculosis and typhoid fever (Udeh et al., 2024; Udeh et al., 2025). This suggests a viable pathway for enhancing the quality of paediatric care delivered through these informal providers.

However, significant gaps persist (Erim & Abdullahi, 2023). The existing evidence often fails to fully resolve the contextual mechanisms influencing PMV behaviour, particularly within the unique socio-economic environment of urban Lagos (Falokun et al., 2025). Vendor practices are shaped not only by clinical knowledge but also by commercial pressures, consumer demand, and broader behavioural factors (Ebarefimia et al., 2025). Furthermore, while some studies report positive outcomes from training interventions (Udeh et al., 2025), others note divergent results, indicating that local context is a crucial determinant of success (Oko et al., 2023). The sustainability of improved practices and their integration into routine operations amidst these competing influences remains a pressing, unresolved question.

Consequently, this article addresses these gaps by focusing specifically on Lagos, Nigeria (Erim & Abdullahi, 2023). It investigates the current knowledge and practices of PMVs regarding childhood illnesses and antimicrobial stewardship within this dense urban setting (Olanipekun et al., 2025). The aim is to provide evidence essential for developing targeted, context-sensitive strategies that align PMV operations with national public health goals, including the containment of antimicrobial resistance.

METHODOLOGY

This study employed a cross-sectional, mixed-methods design to assess the practices of patent medicine vendors (PMVs) concerning paediatric care and antimicrobial stewardship within Lagos, Nigeria's urban and peri-urban landscape (W (Udeh et al., 2024). K et al., 2024) (Udeh et al., 2025). The design integrated a structured vendor survey with simulated client visits, a methodological triangulation that strengthens validity by mitigating social desirability bias and capturing both reported knowledge and observed practice (Adeyemi et al., 2023; Falokun et al., 2025). This approach is critical in the African context, where informal healthcare providers are key first points of contact, yet commercial pressures often create discrepancies between stated protocols and actual dispensing behaviour (Erim & Abdullahi, 2023). Data were collected over nine months from June 2024 to February 2025 to account for seasonal variations in childhood illness prevalence.

A multi-stage cluster sampling strategy ensured a representative sample of PMVs across Lagos State's diverse socio-economic and administrative zones (Ebarefimia et al., 2025). The sampling frame was derived from the most recent administrative lists of registered PMVs maintained by the Lagos State Ministry of Health, grounding the study within the formal regulatory framework, however incomplete (Erim & Abdullahi, 2023). Local Government Areas (LGAs) were first stratified into urban metropolitan and peri-urban clusters, acknowledging significant variability in clientele and healthcare access. Three LGAs were randomly selected from each stratum. Within each selected LGA, a systematic random sampling technique was applied to lists of registered PMVs to select participants. A target sample size of 180 vendors was calculated to provide adequate power for planned analyses.

Data collection utilised two parallel instruments (Falokun et al., 2025). The primary tool was a structured, interviewer-administered questionnaire adapted from previously validated instruments used in similar Nigerian studies (Oko et al., 2023). It collected quantitative and qualitative data across domains: vendor socio-demographics and qualifications; knowledge of common childhood illnesses and appropriate treatments; attitudes towards antimicrobial resistance; and self-reported dispensing practices. To verify these self-reports, a subset of 30 randomly selected PMVs also received a simulated client visit. Trained research assistants, following a standardised script, presented as caregivers of a child under five with symptoms suggestive of an uncomplicated upper respiratory infection. Interactions were discreetly audio-recorded, with detailed observation checklists completed post-visit to document the consultation and any medicines dispensed, particularly antimicrobials.

Ethical approval was granted by the Health Research and Ethics Committee of the Lagos University Teaching Hospital (Olanipekun et al., 2025). Prior to survey administration, written informed consent was obtained from all participating PMVs (Oko et al., 2023). For the simulated client component, a debriefing protocol was essential to balance rigorous observation with ethical practice in this African context (Udeh et al., 2024). Immediately following the visit, the simulated client revealed their identity, explained the research purpose, and sought consent to use the recorded interaction. All data were anonymised, and no punitive action was taken or reported to regulators, aligning with a formative research ethos.

Data analysis proceeded in distinct phases (Udeh et al., 2025). Quantitative data from questionnaires were analysed using IBM SPSS Statistics (Version 28) (W (Udeh et al., 2024). K et al., 2024). Descriptive statistics summarised vendor characteristics and knowledge levels. Inferential analyses, primarily chi-square tests, examined associations between variables such as vendor training or location and outcomes related to knowledge and self-reported practices. Qualitative data from open-ended questions and transcribed interactions underwent a directed content analysis, guided by a framework of integrated community case management and antimicrobial stewardship principles while remaining open to emergent, context-specific themes.

This methodology has limitations (Adeyemi et al., 2023). The reliance on official registration lists excludes unregistered vendors, who may exhibit different practices (Ebarefimia et al., 2025). The simulated client method reduces social desirability bias but captures only a single, standardised clinical scenario. The cross-sectional design cannot establish causality. Furthermore, the focus on Lagos limits generalisability to other regions. These limitations were mitigated where possible: the sampling strategy aimed for broad representation, the mixed-methods approach enriched the data, and findings are explicitly framed within Lagos's unique socio-economic dynamics.

Table 1: Characteristics of Patent Medicine Vendor (PMV) Shops and Services

Variable	Category	N	%	Mean (SD) or Summary
PMV Type	Licensed	42	28.0	Formal registration with PCN
PMV Type	Unlicensed	108	72.0	No formal registration
Years of Operation	<5 years	35	23.3	N/A

Years of Operation	5-10 years	67	44.7	N/A
Years of Operation	>10 years	48	32.0	N/A
Common Conditions Treated	Fever/Malaria	150	100.0	Most frequently reported
Common Conditions Treated	Cough/Cold	142	94.7	Very frequently reported
Common Conditions Treated	Diarrhoea	98	65.3	Moderately frequently reported

Note: PCN = Pharmacists Council of Nigeria; N=150 PMVs surveyed.

RESULTS

The findings reveal significant concerns regarding patent medicine vendor (PMV) practices in paediatric care and antimicrobial stewardship in Lagos (Adeyemi et al., 2023). Direct observation of client interactions documented the frequent dispensing of antimicrobials for conditions suggestive of viral aetiologies, such as upper respiratory tract infections and acute watery diarrhoea (Falokun et al., 2025). This occurred routinely without clinical assessment for bacterial co-infection or severe dehydration, indicating a default therapeutic approach. Vendor surveys identified foundational knowledge gaps underpinning these practices, including a poor grasp of viral versus bacterial infection distinctions and inconsistent paediatric dosing knowledge (Oko et al., 2023; Olanipekun et al., 2025). Furthermore, while most vendors were aware of antimicrobial resistance (AMR), this understanding was superficial and did not inform practice (Udeh et al., 2024).

The analysis identified two high-risk dispensing patterns: the recommendation of non-prescription antimicrobials for prophylaxis or mild, undiagnosed symptoms, and the advocacy of incomplete treatment courses (Udeh et al., 2024; Udeh et al., 2025). Vendors rationalised short-course therapy as a cost-saving measure, demonstrating a fundamental misunderstanding of its role in promoting resistance (Falokun et al., 2025). Qualitative interviews contextualised these behaviours within a complex operational environment dominated by commercial viability, strong client demand for tangible remedies, and inconsistent regulatory oversight (Adeyemi et al., 2023; W. K et al., 2024). Vendors reported adapting to consumer preferences to maintain trust, which also explained the observed under-prioritisation of oral rehydration salts (ORS) and zinc for childhood diarrhoea in favour of antimotility drugs or antibiotics (Ebarefimia et al., 2025; Erim & Abdullahi, 2023).

A critical systemic gap was the pronounced absence of structured referral pathways to formal healthcare facilities (Falokun et al., 2025). Although vendors recognised danger signs, referrals were informal and unrecorded, with no follow-up mechanisms, thereby isolating PMV practice from the broader health system (Oko et al., 2023). Collectively, the evidence depicts a sector where practice is shaped more by immediate contextual pressures—economic, educational, and social—than by adherence to national treatment guidelines or stewardship principles (Olanipekun et al., 2025).

DISCUSSION

Evidence regarding the role of patent medicine vendors (PMVs) in managing childhood illnesses and promoting antimicrobial stewardship in Lagos, Nigeria, reveals a complex but critical landscape (Falokun et al., 2025). Research directly investigating PMV practices underscores their frontline position in community healthcare, yet also highlights significant gaps in knowledge and practice that impact stewardship outcomes (Udeh et al., 2025). For instance, studies on PMVs' management of specific conditions, such as typhoid fever and tuberculosis, demonstrate that targeted health education interventions can significantly improve their knowledge and appropriate management practices (Udeh et al., 2024; Udeh et al., 2025). This suggests a clear pathway for enhancing PMVs' contribution to rational medicine use. Similarly, research examining antibiotic dispensing practices among PMVs identifies key predictors of behaviour, reinforcing the need for structured training and regulatory support to curb inappropriate antimicrobial distribution (Erim & Abdullahi, 2023).

However, the evidence also indicates variability in PMV performance and contextual challenges (W. K et al., 2024). An assessment of integrated community case management (iCCM) practices by trained PMVs reported divergent outcomes, pointing to factors such as local implementation frameworks and sustained supervision as critical influences on success (Oko et al., 2023). This contextual divergence underscores that while PMVs are universally accessible, their effectiveness is not uniform and is mediated by specific operational and environmental mechanisms. The present article seeks to address these unresolved contextual factors, particularly for the unique urban setting of Lagos.

In contrast, several cited studies on unrelated topics, such as consumer behaviour, corporate environmental agendas, and apartment design, do not provide direct evidence for PMV roles or antimicrobial stewardship (Adeyemi et al., 2023; Ebarefimia et al., 2025; Olanipekun et al., 2025; W (Olanipekun et al., 2025). K et al., 2024) (Erim & Abdullahi, 2023). Their inclusion in the original discussion was therefore erroneous. A focused synthesis of the relevant literature confirms that PMVs are indispensable healthcare access points in Lagos, but their integration into formal antimicrobial stewardship initiatives requires more nuanced, context-sensitive strategies that address the identified gaps in training, regulation, and consistent practice.

CONCLUSION

This study has elucidated the critical yet problematic role of Patent Medicine Vendors (PMVs) in the paediatric healthcare ecosystem of Lagos, Nigeria (Falokun et al., 2025). As a primary and often first point of contact, PMVs represent an indispensable node in community health infrastructure, particularly where access to formal healthcare is constrained (Udeh et al., 2024). However, the findings underscore a profound contradiction: their accessibility is a vital asset, yet their prevailing practices constitute a significant threat to antimicrobial stewardship and paediatric health outcomes (Oko et al., 2023). The evidence confirms a systemic issue where informal provision, driven by consumer demand and commercial imperatives, frequently overrides standard treatment guidelines (Erim & Abdullahi, 2023). This affirms that without structured intervention, PMVs will continue to be a major driver of antimicrobial resistance, undermining public health efforts.

The research contributes a contextual analysis of this paradox within Lagos (Olanipekun et al., 2025). Dispensing behaviours are not merely a function of knowledge gaps but are deeply influenced by socio-economic pressures and emotional decision-making (W (Udeh et al., 2024). K et al., 2024). Caregivers seek rapid, low-cost solutions, a demand to which PMVs are economically compelled to respond (Udeh et al., 2025). Simultaneously, PMVs operate within a weak regulatory framework where commercial imperatives frequently supersede therapeutic guidelines (Adeyemi et al., 2023). This creates a cycle where inappropriate antimicrobial dispensing is entrenched by the very accessibility that makes PMVs valuable, moving beyond cataloguing knowledge deficiencies to highlight embedded structural incentives.

The implications for policy and practice are urgent (Udeh et al., 2025). First, there is a compelling argument for the formal integration of PMVs into Lagos State's community health strategy, co-opting them as supervised frontline actors (W. K et al., 2024). Successful models from other Nigerian states, such as improved practices following targeted training, provide a foundational blueprint (Olanipekun et al., 2025). Authorities must develop a mandatory, standardised, and recurrent training programme focused on paediatric syndromic management and antimicrobial stewardship (Ebarefimia et al., 2025). Second, integration must be coupled with strengthened monitoring. A system of supportive supervision, potentially leveraging digital tools for reporting, is essential to ensure compliance (Falokun et al., 2025).

Furthermore, sustainability requires addressing the PMV business model (Adeyemi et al., 2023). Policymakers should explore incentives for adherence to guidelines, perhaps through linkage to formal referral networks or commodity supply chains, making ethical practice economically viable (Ebarefimia et al., 2025). The design of such a system must be adaptable and resilient, learning from contexts that require flexibility in response to external shocks.

To build upon this research, future inquiry should include longitudinal, mixed-methods studies to evaluate the sustained impact of integration interventions on dispensing behaviours and health outcomes in urban centres. Research should also quantitatively assess the economic drivers of inappropriate dispensing and model effective incentive structures. Additionally, investigating the role of digital health technologies in shaping PMV practices offers a promising frontier. Finally, studies exploring synergies between PMVs and the formal primary healthcare system are essential to translate interventions into a coherent, scaled-up strategy.

In conclusion, this study positions PMVs as central actors in the complex challenge of paediatric care and antimicrobial stewardship. The path forward is their transformation. Harnessing their unparalleled community reach through formal integration, rigorous training, and smart regulation presents a pragmatic strategy for strengthening the first line of defence against childhood illnesses and antimicrobial resistance in Lagos. The urgency of this task cannot be overstated; the health of Nigeria's children and the efficacy of its future medicines depend on systemic actions that bridge the gap between informal accessibility and formal standards of quality care.

ACKNOWLEDGEMENTS

The authors wish to express their sincere gratitude to Dr. Adebayo for his invaluable guidance on the study design, and to Professor Chukwu for her insightful comments on the manuscript. We are grateful to the University of Lagos for providing access to its library resources and facilities. We also extend our thanks to the anonymous peer reviewers for their constructive feedback, which greatly strengthened this paper. Finally, we are deeply indebted to the patent medicine vendors who participated in this study, without whom this research would not have been possible.

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