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## Malaria medication utilization among community pharmacists and patent medicine vendors in port Harcourt local government area of Rivers state, Nigeria

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### Abstract

This study investigates the extent of malaria medication utilization among Community Pharmacists (CPs) and Patent Medicine Vendors (PMVs) in Port Harcourt Local Government Area of Rivers state. Questionnaire was developed and used as the method of data collection. Responses were elicited from 58 CPs and 198 PMVs. Observations using Mystery Clients were also used in 40 of the facilities. Data obtained were entered into a computer and analyzed using Excel spreadsheet and the percentage frequencies were calculated.

The result showed that the use of anti-malarial agents was less rational among Patent Medicine Vendors (PMVs) than Community Pharmacists (CPs). The PMVs are the largest outlets for treatment of uncomplicated childhood malaria in Port Harcourt Local Government Area. There is an improvement in the use of Artemisinin- based Combination Therapy (ACT) for treatment of malaria. Both CPs and PMVs were aware of the national regulation to stock and sell only drugs registered by NAFDAC and the need to check the expiry date before procurement and sale. Brands of Artemether/lumefantrine and sulfadoxine/pyrimethamine were respectively the most common ACTs and non-ACTs, stocked and dispensed (or sold) by both CPs and PMVs.

In conclusion, the study demonstrates that there is a level of improvement in malaria medication utilization amongst CPs and PMVs and if Pharmacists' support staff of Community pharmacies and PMVs are adequately trained and supervised, they can effectively administer malaria treatments. Equally, provision of subsidy on ACTs by Government will go a long way to enhance access and affordability.

**Keywords:** Malaria medication, community pharmacists, patent medicine vendors

### Introduction

Malaria is still a major threat to public health and one of the leading causes of death in children especially those under five years of age in Africa <sup>[1, 2]</sup>. Though the disease is preventable and curable, reports has it that 90 - 94% of deaths due to malaria still occur in Africa <sup>[3]</sup>, particularly among children and pregnant women. Furthermore, available records show that at least 50% of the population of Nigeria experience at least one episode of clinical malaria each year <sup>[4]</sup>. It is also the cause of many socio-economic problems <sup>[5]</sup>.

The utilization of anti-malaria drugs is considered very strategic in the prevention and treatment of malaria. Patent medicine sellers (PMS) play an important role in supplying the medication needs of the community particularly antimalarials <sup>[6]</sup> and have been found to be the first point of care for the prevention and treatment of malaria in most rural and even some urban settings. This is due to their proximity to the patients/clients. They sell medicines in their original packets as they come from the manufacturer. That package must not be altered, and drugs must not be extracted from the package and sold in lesser or greater number, as this constitutes dispensing <sup>[7]</sup>. They play an important role in malaria control programs when adequately trained and monitored. PMVs are drug sellers without formal pharmacy training but have been licensed in Nigeria by Pharmacists Council of Nigeria (PCN) to sell and dispense certain category of drugs which are mostly Over-the Counter (OTC) medicines such as hematinics, analgesics, anti-helminthics and presently including anti-malarial drugs. A study of urban malaria in Lagos shows that PMVs were the most common source of malaria treatment by 36% <sup>[8]</sup> and in Edo State PMVs shops was used for child malaria treatment by 44% <sup>[9]</sup>. They act as the first line of treatment for malaria for many patients/clients and a primary source of health care systems.

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The Community Pharmacists (CPs) are the third largest health professionals after the physicians and nurses [10] and are most accessible to the public. They supply medicines in accordance with guiding rules and principles of good professional practice based on a prescription or, when legally permitted sell them without a prescription. They ensure an accurate supply of quality and appropriate pharmaceutical products and also counsel patients/clients on rational use of drugs in addition to other professional duties.

PMVs are widely distributed in Nigeria due to the inadequacy of skilled health professionals (such as Pharmacists) required for the procurement, storage and dispensing of medicines. Some PMVs are trained Pharmacy technicians with the basic knowledge of dispensing. They therefore serve as assistants to registered Pharmacists in Hospital and Community practice settings.

This study is therefore, carried out to assess the level of utilization of anti-malarial drugs among PMVs and CPs.

**Methods**

**Design**

A descriptive cross sectional and simulation design was used in the study. This method allows for the use of questionnaire, mystery client method and secondary data to obtain the desired information.

**Study population**

The population for this study includes malarial medication providers especially CPs and PMVs in Port Harcourt Local Government Area of Rivers State. A total projected population of 300 respondents was drawn from the LGA.

**Sampling technique.**

The quota random sample technique is used to pull a sample of 300 respondents.

**Sample Selection Process**

Port Harcourt main town	80
Diobu	80
Elekahia/Rumukalabor	40
Ogbunabali	40
Abuloma/Amadi-ama	30
D/line/ Water line	30
Total	300

**Data collection**

Questionnaires and Mystery clients' observations were used to obtain relevant information from the population of study. 300 questionnaires were distributed and 256 were retrieved at the end. The mystery clients visited 40 facilities made up of 20 Community Pharmacies and 20 Patent Medicine Vendor shops to observe the rational use of anti-malaria agents.

**Data Analysis**

The data from the study were entered into Microsoft Excel spreadsheet and rechecked prior to sorting. The percentage frequencies were calculated. The appropriateness of anti-malaria agents prescribing was assessed using the mystery client method.

**Validity and Reliability of Research Instrument**

The research instrument have already been used by other researchers in a similar research and was adapted and employed in this study.

**Results**

**Demographic characteristics of anti-malarial agents' providers**

**Gender:** Of the 198 PMVs, 113 (57%) were females. Also, 37 (63.8%) out of the 58 CPs visited were females

**Table 2:** Level of Education

Level of Education	PMVs	%	CPs	%
Non-formal	0	0	0	0
Primary level	8	4.1	0	0
Secondary level	123	62.1	22	37.9
Tertiary level	67	33.8	36	62.1
Total	198	100	58	100

**Table 3:** Employment status

Employment status	PMVs	%	CPs	%
Owner	123	62.2	11	19.0
Employee	68	34.3	47	81.0
Family member	7	3.5	-	-
Total	198	100	58	100

All the outlets were involved in the utilization of anti-malarial drugs

**Table 4:** Distribution of respondents based on treatment of childhood uncomplicated malaria and referral practice.

Response	PMVs	%	CPs	%
Treat	166	83.8	58	100
Refer	32	16.2	-	-
Total	198	100	58	100

**Table 5:** Categories of anti-malaria agents used in the treatment of childhood uncomplicated malaria.

Classes of drugs use	PMVs	%	CPs	%
ACTs	94	56.6	48	87.3
Chloroquine	28	16.9	2	3.6
Amodiaquine	5	3.0	1	1.8
Artesunate	2	1.2	3	5.4
Sulphadoxine/pyrimethamine	33	19.9	1	1.8
Quinine	4	2.4	-	-
Total	166	100	55	100

**Table 6:** Sources of anti-malarial drugs stocked.

Sources	PMVs	%	CPs	%
Markets	56	28.3	-	-
Company representatives	49	24.7	49	84.5
Pharmacies	93	47.0	9	15.5
Total	198	100	58	100

**Table 7:** Prescription method utilized by PMVs and CPs using Mystery Clients observation

Method used	PMVs	%	CPs	%
Rational	9	45.0	14	70.0
Irrational	11	55.0	6	30.0
Total	20	100	20	100

**Table 8:** The Classes of Anti-Malaria Agent Stocked

Therapeutic class	PMV	(%)	CPs	(%)
Artesunate.+ Sulfadoxine/ pyrimethamine	15	1.3	1	0.3
Artemether	9	0.8	1	0.3
Artesunate + Amodiaquine	51	4.6	11	3.3
Amodiaquine	19	1.7	7	2.1
Artemether/ Lumefantrine	166	14.9	58	17.8
Dhydroartemisinin	46	4.1	1	0.3
Chloroquine	121	10.9	13	4.0
Artesunate	163	14.7	53	16.3
Artesunate + Mefloquine	93	8.4	41	12.6
Dihydroartemisinin/piperazine	87	7.8	15	4.6
Halofantrine	72	6.5	9	2.7
Proguanil	41	3.7	53	16.3
Quinine	56	5.0	4	1.23
Sulfadoxine/pyrimethamine	161	14.5	58	17.8
Sulfamethopyrazine/pyrimethamine	7	0.6	-	
Total	1107	100	325	100

**Table 9:** Country of origin for anti-malaria drugs stocked by PMVs and CPs

Country of origin for drug stocked	frequency	Percentage
India	23	41.1
China	14	25.0
Nigeria	11	19.6
Vietnam	1	1.8
Switzerland	1	1.8
Italy	1	1.8
South Africa	1	1.8
Netherlands	2	3.5
Senegal	1	1.8
Belgium	1	1.8
Total	56	100

## Discussion

Drug utilization studies are important to measure the pattern and quality of drugs in use, which facilitate the rational treatment of malarial. Rationalization of anti-malarial drugs requires appropriateness, safe and cost-effective prescribing pattern. The use of drugs at the study site was found to be less rational among PMVs (45.0%). This situation could be expected since the minimum educational level obtained by most of them was secondary level 123 (62.1%) and the fact that they were not trained and hence lack pharmacological knowledge along with practical prescribing skills to recommend anti-malarial rationally.

The study revealed that the PMVs and CPs are the most common health care providers involved in the usage, prescription, dispensing and administration of anti-malarial drugs. This occurs due to their proximity with the people. The findings also revealed that PMVs are the largest source of malarial treatment which shows (198; 77.30%) when compared to the CPs (58; 22.7%). This is because one is likely to find the actual owner (123; 62.2%) of the shop at all times and they sell what their customer demands without asking of prescription, compared to the CPs who will demand for prescription, asked some questions before dispensing and will also like to counsel the client and the fact that they are widely distributed in Nigeria due to the inadequacy of skilled health professional as earlier reported. The study shows that more female (113; 57.1% and 37; 63.8) for PMVs and CPs respectively, were involved in the anti-malaria utilization than male (85; 42.9% and 21; 36.2%) for PMVs and CPs respectively.

The study shows that the Community Pharmacists and their staffs (58:100%) interviewed were knowledgeable on malaria than the PMVs. No case of referral was recorded among CPs while 32 (16.2%) of PMVs refer their clients in severe cases and when their clients did not respond to initial treatment with anti-malarial drug.

Brands of Sulphadoxine/Pyrimethamine (SP) combinations was found to be the most common non-ACTs stocked followed by Chloroquine (CQ) while Artemether/lumefantrine combination is the most common ACT stocked followed by artesunate as Artemisinin derivative. But only a slight decrease in non-ACTs and increase in ACTs prescriptions were observed. This might be attributable to customers' continuous demand for the older drugs which according to them were still effective for them as confessed by some PMVs. This could also be as a result of the cost of ACT agents and its course of therapy which do not encourage compliances.

The study also revealed that there is an improvement in the change from non-ACTs to that of ACTs in malaria treatments, but in some areas it was found to be quite low especially in the sub-urban area of PHALGA. This indicates inadequacy in the implementation of policy by the Government and poor drug regulation.

For the source of anti-malaria drug, the study shows that PMVs reportedly procured their drugs from licensed Pharmaceutical stores (93; 47.0%). While the CPs procured their drugs mostly from company representatives (49; 84.5%). This is of utmost importance since drug quality and hence its efficacy is also dependent on the source.

The study also revealed that most of the anti-malarial drugs used originate from India (23/56; 41.1%). PMVs and CPs interviewed where all aware of the National regulation to stock and sell only drugs registered by NAFDAC and the need to check for expiry dates before procurement and sale. This could be attributable to the awareness gained from certain workshops and media campaigns mounted by NAFDAC on the dangers of adulterated and sub-standard drugs and the need for individuals to purchase only drugs registered by it.

## Conclusion

The present study further revealed that PMVs were the largest source of malarial treatment but their prescription practices were still inappropriate and needs to be urgently addressed by the Government. Irrational use of anti-malarial agents is still being practiced especially among PMVs and some employees of Community Pharmacies. To accelerate the attainment of the SDGs, there is an urgent need to create more awareness on the danger of irrational use of anti-malarial agents among this category of health providers.

## Recommendations

1. The PMVs and some Community Pharmacy employees need to be adequately trained and supervised; so as to enhance effective administration of malaria treatment.
2. There is need for the establishment of a more effective Government regulation to checkmate inappropriate malaria treatments by the PMVs since they are being considered as distribution points for anti-malarials in the National Malaria Control programmes.
3. Government at different levels should subsidize as well as monitor the distribution of the ACTs to enhance affordability and improved malaria control and management.

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