

# KNOWLEDGE AND USE OF COMBINATION THERAPY FOR TREATMENT OF MALARIA AMONGST PATENT MEDICINE VENDORS (PMVS) IN KANO STATE

LAWAN UM\*

ABUBAKAR IS\*

GREMA BA\*\*\*

NASIR NA\*\*

## INTRODUCTION

Worldwide, it is estimated that malaria kills more than one million people each year, making it the world's third deadliest infectious disease, after AIDS and Tuberculosis.<sup>1</sup>

Young children and pregnant women are at highest risk of Malaria infection and mortality.<sup>2</sup> In Nigeria, Malaria is the most common cause of hospital attendance in all age groups. It is also one of the four most common causes of childhood mortality in the country, the other three being Acute Respiratory Infection (Pneumonia), diarrhea and measles. It is estimated that 50% of the population has at least one episode of malaria each year while children under 5 years have on average 2-4 attacks in a year.<sup>3</sup>

Prompt access to effective antimalarial treatment is one of the major strategies for reducing the intolerable burden of malaria.<sup>4</sup> Prompt access means having treatment available as near the home as possible either in the community or in the home itself. Mothers, caregivers and community-based workers such as Patent Medicine Vendors (PMVs), Village Health Workers (VHWs) etc are being trained on the recognition of basic symptoms of uncomplicated malaria and have been empowered to provide treatment for uncomplicated malaria at home and the community level.<sup>3,5</sup> Past studies highlighted the potential role of drug retailers to improve access to early effective Malaria treatment.<sup>4,6</sup>

Effective treatment of Malaria means using the right drugs in the right dosages to prevent drug resistance. The World Health Organization (WHO) and the Roll Back Malaria partnership (including United States Agency for International Development (USAID) now recommend that all countries experiencing resistance to their current first-line, single-drug therapy including Nigeria, should change to a combination therapy, ideally including an artemisinin drug.<sup>1,2,7</sup> Since private retailers are

## ABSTRACT

**Background:** Malaria is a leading cause of morbidity and mortality in the tropics.

**Objectives:** To determine the knowledge of Malaria and combination therapy for its treatment among PMVs; and to investigate the use of combination therapy for treatment of Malaria, using a structured questionnaire.

**Methods:** A cross sectional descriptive study was conducted among 162 randomly selected Patent Medicine Vendors (PMVs)

**Results:** The results show that majority of the subjects knew about malaria but, only 31.5% of them have heard of combination therapy for treatment of malaria. The current recommended combinations for effective malaria treatment are not known to most of them. Only 14.2% of the PMVs had good knowledge of malaria and combination therapy for treatment of malaria. Up to 72.5% of those who were aware of the combination therapy have used one or more of the drugs on their patients. However, 64.9% of them used the drugs irrationally. Sulphadoxine-pyramethamine and artesunate combination or amodiaquine and artemether were the common drugs prescribed.

**Conclusion:** It was concluded that registration of PMVs should

**Author Affiliations:** \*Department of Community Medicine, Bayero University Kano, Kano State  
\*\*Department of Community Medicine, Aminu Kano Teaching Hospital, Kano State, \*\*\*Department of Family Medicine, Aminu Kano Teaching Hospital, Kano State

**Corresponding Author: Dr Muhammad Lawan Umar**  
Department of Community Medicine,  
Bayero University Kano, Kano State.

E-mail: [drlawanumarus@yahoo.com](mailto:drlawanumarus@yahoo.com)

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often the primary source of drugs used in the home, the potential role of this group as partners for effective malaria treatment and control had been recognized. The PMVs in Nigeria are therefore expected to be knowledgeable on malaria and combination therapy for its treatment. This study was therefore planned to assess the knowledge of PMVs on malaria and combination therapy for its treatment; and to investigate the use of combination therapy for treatment of malaria amongst PMVs in Kano State. Information from this research could be useful to policy makers

and programme managers for programme management and further research.

## METHODOLOGY

The study was carried out in Unguwa Uku ward of Tarauni Local Government Area (LGA) of Kano State. Using a cross sectional design, one hundred and sixty two (162) PMVs were studied. Sample size was estimated using an appropriate formula for calculating sample size for descriptive study ( $n = z^2pq/d^2$ ). The multistage sampling method was deployed for the selection of the subjects: simple random sampling was used at the first and second stages to select Tarauni LGA and Unguwa Uku wards from the list of LGAs in Kano State and the wards in Tarauni LGA, respectively. The list of the PMVs who had retail outlets was compiled to constitute the sampling frame. Using a sampling interval of 2 obtained by dividing the number in the sampling frame with the required sample size (330/162), one in every two PMVs was interviewed using a structured questionnaire until the required sample size was met.

The data collected was collated and analyzed using Epi info 3.2.02 and Minitab 12.21 computer statistical softwares. Categorical data were summarized using frequencies and percentages while quantitative variables were summarized using measures of central tendency and of dispersion, as the case may be. Respondents' knowledge was scored and graded using a system adapted from a past study.<sup>8</sup> Each correct response on knowledge questions attracted 1 point and no point was given for any wrong answer. Respondents who scored = 19 points were considered as having good knowledge, those who scored between 10 and 18 were considered as having fair knowledge and those with score of = 9 points considered as having poor knowledge. Permission for the study was obtained from Tarauni LGA, and informed consent was also sought and obtained from

each of the participants before the commencement of the interview.

## RESULTS

The age distribution of the respondents is as shown in Table 1. Most of the respondents (23.5%) were between 21-25 years. Their mean age was  $29.4 \pm 8.9$  years. The highest level of education attained by the majority of the PMVs (48.8%) was secondary school education. Interestingly, 80.3% of the PMVs studied had not had any formal health training (Table I). However, about one-third of respondents i.e 56 (34.6%) claimed to have had training on malaria and/or use of combination therapy for its

treatment from different sources as shown in Table II.

The PMVs responses on the questions used to examine their knowledge of malaria and combination therapy for treatment of malaria is summarized in Table III. Majority of the subjects knew about malaria disease. However, only 51 (31.5%) had heard of combination therapy for treatment of malaria. The current recommended combinations for effective malaria treatment was not known by most of the respondents as indicated in Table III. Overall, only 14.2% of the PMVs had good knowledge of malaria and combination therapy for treatment of

**TABLE I: RESPONDENTS' PERSONAL DATA**

Parameter	Frequency	Percentage (%)
<b>Age group</b>		
16-20	28	17.3
21-25	38	23.5
26-30	32	19.8
31-35	24	14.8
36-40	15	9.3
41-45	14	8.6
46-50	11	6.8
<b>Sex</b>		
Males	140	86.4
Females	22	13.6
<b>Highest educational level</b>		
No education	4	2.5
Qur'anic	7	4.3
Primary	19	11.7
Secondary	79	48.8
Post secondary	53	32.7
<b>Formal health training</b>		
None	130	80.3
CHEW	7	4.3
EHO	11	6.8
Nursing	12	7.4
Others	2	1.2

\* CHEW Community Health Extension Worker

\* EHO Environmental Health Officer

**Table II:** Sources of respondents' training on Malaria and/or combination therapy for Malaria treatment

Source	Frequency	Percentage (%)
School/ workshops	17	30.4
Masters/ other PMVs	39	69.6
<b>Total</b>	<b>56</b>	<b>100.0</b>

**Table III:** Parameters used to assess PMVs knowledge of Malaria and combination therapy for Malaria treatment

Parameter	Correct response (n = 162)	Percentage (%)
<b>Heard of Malaria</b>	162	100.0
<b>Ways of transmitting Malaria</b>		
Mosquito	159	98.5
House fly	4	2.5
Blood transfusion	7	4.3
Contaminated water or food	37	22.8
Contact	2	1.2
<b>Awareness of symptoms of Malaria</b>		
Fever	162	100.0
Headache	144	88.9
Vomiting	120	74.1
Body pains	114	70.4
Convulsions	25	15.4
Unconsciousness	10	6.2
Weakness of the body	10	6.2
<b>Heard of combination therapy for Malaria</b>	51	31.5
<b>Awareness of recommended Malaria combination Drugs</b>		
Chloroquine + Sulphadoxin-Pyramethamine	16	9.9
Amodiaquine + Sulphadoxine-Pyramethamine	8	4.9
Quinine + Tetracyclines	-	-
Sulphadoxine-Pyramethamine + Artesunate	26	16.0
Artemether/Lumefantrine	25	15.4
Alaxin + Sulphadoxine-Pyramethamine	20	12.3
Amodiaquine + Artesunate	26	16.0

**Table IV:** Summary of respondents' knowledge on Malaria and combination therapy for Malaria

Knowledge	Frequency	Percentage (%)
Good	23	14.2
Fair	65	40.1
Poor	74	45.7
<b>Total</b>	<b>162</b>	<b>100.0</b>

malaria. The summary of respondents' grades on their knowledge of Malaria and combination therapy for its treatment is as in Table IV.

Most respondents 37 (72.5%) who claimed knowledge of combination therapy for malaria treatment had used one or more of the drugs on their patients. About one-third, 13 (35.1%) of those who claimed using combination drugs described their use correctly. The remaining 64.9% were however using the drugs irrationally. The common combination drugs prescribed by the PMVs for treatment of malaria are highlighted in Table V. Majority of PMVs who used combination drugs for malaria treatment prescribed sulphadoxine-pyramethamine and artesunate combination or amodiaquine and artemether combination.

## DISCUSSION

Patent Medicine Vendors (PMVs) include individuals, owners, or attendants working in private shops that may be registered or unregistered.<sup>9</sup> Typically, these shops may legally sell over-the-counter drugs, and generally they also illegally sell prescription drugs such as antibiotics, sedatives, etc.<sup>9</sup> In spite of problems with the low quality of drugs and service, clients go to drug shops rather than to formal sector alternatives because they are more accessible, have drugs, or are more responsive to clients.<sup>10</sup> The World Health Organization (WHO) has recognized the role of the retail sector in helping to meet the international targets on prompt access to antimalarial drugs.<sup>11,12</sup>

In many settings in Africa, over 50% of fever cases in children are treated with drugs obtained from private retailers, including pharmacies, medicine shops, or general provisions shops. In the majority of cases, the attendants dispensing drugs have little or no medical training, and the service (e.g., recognition of the illness, choice and regimen of drugs recommended for treatment, instructions to the client) and drugs provided are of poor

**Table V:** Common antimalarial drug combinations prescribed by the PMVs

Drugs	Frequency (n = 37)	Percentage (%)
Chloroquine + Sulphadoxine-Pyramethamine	16	43.2
Amodiaquine + Sulphadoxine-Pyramethamine	8	21.6
Sulphadoxine-Pyramethamine + Artesunate	26	70.3
Artemether/ Lumefantrine	25	67.6
Alaxin + Sulphadoxine-Pyramethamine	20	54.0
Amodiaquine +Artemether	26	70.3

quality.<sup>13</sup> Our study corroborates this report of lack of medical orientation or training of significant number of drug retailers to attend to the health needs of the people they serve. Most of the PMVs we studied (80.3%) had not had any formal health training. Similarly, a study conducted in 17 villages of Gokana (Ogoni land) in Rivers State of Nigeria reported that out of the 40 PMVs studied only eight (20%) had had formal health training and only eight could understand doctor's prescriptions.<sup>14</sup>

The rational use of an effective antimalarial drug not only reduces the risk of severe disease and death and shortens the duration of illness, but also contributes to slowing down the development of the parasite's resistance to antimalarial drugs. Our finding of lack of formal health training for PMVs is a pointer to the potential health risks people face in our communities; and to a big gap in the battle for reducing drug resistance in Nigeria. This is an indication that local authorities need to plan for prompt intervention in order to prevent and/or control the development of drug resistance to antimalarial drugs, and specifically to

Artemisinin combination drugs. The low level of the PMVs' knowledge, specifically on antimalarial drug combinations as observed in this study further reiterates the need for urgent intervention regarding the PMVs and the fast developing drug resistance to the commonly prescribed antimalarial drugs. There are also concerns surrounding the appropriateness of drugs and information that medicine sellers provide. Often the type or dose of medicine prescribed is inappropriate for the complaint.<sup>15,16</sup> In a baseline survey in Kenya, only 4% of children prescribed chloroquine from drug retailers received an appropriate dose, and only 2% received this dose over the recommended three-day period.<sup>16</sup>

The WHO recommends that treatment policies for falciparum malaria in all countries experiencing resistance to monotherapies should be combination therapies, preferably those containing an artemisinin derivative.<sup>7</sup> The basic tenet of combination therapy is that the probability of resistance developing simultaneously to two chemotherapeutic agents with independent mechanisms of action is extremely low.<sup>17,18</sup> However, less than

a quarter of our respondents (22.8%) claimed ever using any of the recommended combination drugs for treatment of malaria on their patients. Surprisingly only about one-third of those who claimed using the combination drugs described its use correctly. This means that the majority of the PMVs were using antimalarial drug combinations incorrectly. On the other hand, the majority of the PMVs studied were still using monotherapy for the treatment of malaria. Interestingly, one study from Nigeria similarly reported that 95% of medicine sellers incorrectly considered artesunate monotherapy to be an ACT.<sup>19</sup> This practice may jeopardize ACT efficacy in the long-term.

### Conclusion and Recommendations

This study found that the majority of the PMVs studied had no formal health training and had poor knowledge of combination therapy for malaria. Although they knew the signs and symptoms of malaria, most of them do not use combination drugs for its treatment. Since drug prescriptions are sensitive issues requiring knowledge of the disease, drugs and of the microbiology including drug resistance, health authorities should liaise with Pharmaceutical society of Nigeria (PSN) and National agency for drugs administration and control (NAFDAC) to ensure that registration of PMVs is sanitized to include only those with medical orientation. The LGA primary health care (PHC) departments, ministry for local government and the State ministry of health should ensure continuing medical education on regular basis for all PMVs.

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