



MALARIA RISK PERCEPTIONS AND PREVENTIVE PRACTICES AND BEHAVIOURS AMONG BENUE SOUTH PEOPLE GROUPS



¹Ogah Ekirigwe, ²Aju-Ameh C.Onyawaobi, ¹Okibe F.Godwin, ¹Adoga S.Onyabakpa, ³Adeniyi K.A., ⁴Obiajunwa Obichi., ⁵Ebereonwu P.U.

¹Department of Chemistry Federal University of Health Sciences, Otuokpo

² Department of Biological Sciences Federal University of Health Sciences, Otuokpo

³ Department of Public Health and Epidemiology, Nigerian Institute of Medical Research, Yaba, Lagos.

⁴ Department of Public Health and Epidemiology, Gregory University, Uturu.

⁵ Department of Chemistry University of Jos

Corresponding author: uhinyohe@gmail.com,

Received: September 14, 2023 Accepted: November 28, 2023

Abstract:

In this research, a cursory look was taken at Malaria Risk Perceptions and Preventive Practices/ Behaviours among Benue South Senatorial People Groups using descriptive statistics and percentage ranking to analyze the variables. The age distribution of the respondents (in years) is in the order (24-34) > (35-44) > (45-54) > > (15-24) at 31.56 %, 26.89%, 19.33%, 17.33% and 4.89% respectively. 55.33% of the study population were male while 44.67% were females. The marital status shows that 54.00% of the population are married, 36.67% are unmarried, 5.11% are widowed, and 2.44% are separated while 1.56% are divorced. 44.00% of the study population are educated to secondary education level, 37.11% attained basic education, and 12.22% are educated to the tertiary education level while 6.67 have no formal education. 37.78% of the study population perceived mosquito as the cause of malaria, 17.56 held the opinion that malaria is caused by bad and dirty environment. 9.33% of the respondent opined that malaria is caused by heat while 9.11%, 8.45, 8.22%, 7.11% and 2.44% held that malaria is caused by getting rained on, cold, eating bad food, witchcraft and other factors respectively. According to the respondents symptoms of malaria include: high temperature (31.78%), head ache (24.44%), cold/catarrh (11.33%), change in urine colour (9.56%), vomiting (6.89%), body ache/joint pain (5.33%), loss of appetite (4.89%), convulsion (4.67), among others. 28.8% prefer the use of artemisinin combination therapy, 21.55 (local herbs), 18.22% (analgesics such as paracetamol), 15.78% (pain reliever such as ibuprofen), 11.78% (chloroquine), 3.78%. 28.22% of the respondents obtained their prescription from a medical doctor/pharmacist, 21.11% received their prescriptions from a nurse, whereas 20.22% engaged in self-prescription, 16.00% relied on relatives for their prescriptions while 12.8% obtained their prescriptions from herb sellers. 41.11% of the study population tested their malaria status while over 56.44% do not run any malaria test. From the research findings, there is need for disseminating accurate knowledge and increasing malaria awareness amongst the general population through radio jingles and other media.

Keywords:

Malaria, Knowledge, Attitude, Practices, Benue South, Nigeria

Introduction

Malaria remains a global public health burden claiming an estimated 619 000 deaths in 2021 with nearly half of the world's population at risk of the disease (WHO, 2023). A disproportionately high share of the global malaria burden 95% cases and 96% deaths is borne by the WHO African Region; with about 80% of all malaria deaths occurring in children under five in the same region. Nigeria continues to bear the heaviest malaria burden (cases-26.8%; deaths-31.9%) worldwide with cases and death rates topping an all-time high (WHO, 2022).

An accurate understanding of the disease dynamics, parasite and vector bionomics is indispensable in bending the malaria curve to zero disease burden. While research and literature on malaria may be adjudged robust, knowledge of malaria is not bereft of misconceptions, especially among high risk and vulnerable groups. Misconceptions about malaria continue to lace the descriptions of the ubiquitous disease from the days of early discovery to present times. In the beginning, it was thought to be associated with marshes, swamps and bad air. The word malaria is derived from two Italian words from *mala* (bad) and *aria* (air), literally meaning "bad air" (Brown, 1984).

Malaria is now known to be caused by multi-parasites belonging to the *Plasmodium* genus which are transmitted through the bites of *Anopheles* mosquitoes (Snow and Gilles, 2002). Malaria control initiatives will be ineffective if the disease perceptions are not rightly defined (Aju-Ameh *et al.*, 2016). Malaria endemic communities with poor knowledge are more likely exhibit behaviours that exposes them to the disease. Against this backdrop, this study explores malaria knowledge, attitude and practices amongst the people in the study communities; to enhance control interventions.

Materials and Methods:

Study Site

The study focused on the people groups living in the South Senatorial Area of Benue State, middle belt Nigeria. Benue State lies within longitude 7° 47' and 10° 0' East and Latitude 6° 25' and 8° 8' north; and shares boundaries with five other states namely: Cross-River to the south, Enugu to the south-west, Kogi to the west and Nassarawa to the north with Taraba to the east. The State also shares a common boundary with the Republic of Cameroon on the south-east. The south-eastern part of the State adjoins the Obudu-Cameroon mountain range, and has a cooler climate similar to that of the Jos, Plateau (Benue, 2014). The state occupies a landmass of 34,059 square kilometres

with a population of about 4,253,641 as at the 2006 census (Federal Republic of Nigeria [Frong], 2009) and by projection about 5,741,800 population. There are several ethnic groups, including Igede, Etulo and Abakwa. Jukun, Hausa, Akweya, Nyifon, Tiv and Idoma; the last two being the predominantly spoken languages. The Tivs occupy fourteen (14) local government areas, while the Idomas and Igedes occupy the remaining nine (9) local government areas (Ado-Igumale, Agatu-Obagaji, Apa-Ugbokpo, **Obi-Obarike-Ito**, **Ogbadibo-Otukpa**, **Ohimini-Idekpa-Okpiko**, **Oju-Oju**, **Okpokwu-Okpoga**, **Otukpo-Otukpo**) which makes up Benue South Senatorial Area and the study location.



Figure 1: Map of Benue State Showing Benue South Senatorial Area

Study Design and Sampling Strategy

A cross sectional investigation was conducted in the study communities using a semi structured (both open and closed ended questions) questionnaire. The entire questionnaire had five segments, four of which were on malaria related knowledge and practices. The first segment of the survey questionnaire-Section A focused on Socio-demographic characteristics of respondents; Section B on knowledge and perception of the cause and signs/symptoms of malaria; while Section C was on malaria treatment practices among respondents and Section D provided insight on malaria preventive practices and utilization of long lasting insecticide treated nets (LLINs) by respondents.

Sample Size

The sample size for the household survey in the selected communities in the LGA was derived using the formula (Lemeshow *et al*, 1990):

$$n = \frac{Z^2 [p(1-p)]}{d^2} \quad (1)$$

where n = sample size, Z = level of significance, p = the estimated prevalence of malaria in study LGA, d = sampling error that can be tolerated (0.05 or 5%).

The sample population included willing participants ages fifteen and above, irrespective of occupation, marital status, and educational background, social class, religious and cultural affiliation. Consequently, a mixed population of 450 individuals were screened and the survey was conducted between February and June, 2023.

Ethical Clearance

Contents of the informed consent forms was explained to the survey participants who thereafter signed the informed consent (of legal age) or assent (under 18 years of age), obtained in writing. The proposal was reviewed by the Institutional Review Board (IRB) of the Federal University of Health Sciences Otukpo (FUHSO-IRB). Consequent upon this, ethical approval was given by the Health Research Ethics Committee (HREC) with the number: FUHSO-HREC 02/05/2023. Community entry and advocacy visits were carried out, and informed consent of household, participants, or community heads and of all participants including minors and their guardians were all gotten and the team worked with only those who gave their consent at each point in time. Participants were all selected randomly.

Statistical Analysis

Data from the investigations were sorted into related groups and subjected to statistical analysis using descriptive statistics, percentage and ranking were used to analyse the variables.

Results

The Socio-Demographic characteristics of persons in the selected study communities are presented in Table 1, Table 2 presents frequency and ranking distribution of causes and symptoms of malaria while Table 3 shows the frequency and ranking distribution of preferred treatment practices.

Table 1: Frequency, Percentage and Ranking Distribution of Socio-demographic Characteristics of Respondents in the Selected Communities

	Oju	Obi	Ohimini	Ogbadibo	Okpokwu	Apa	Otukpo	Ado	Agatu	Total Freq. n=450 (%)	Ranking
Socio-demographic characteristics	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq		
Age Group in Years											
15-24	9	8	7	10	9	10	9	8	8	78 (17.33%)	4 th
24-34	17	18	14	16	14	15	12	20	16	142 (31.56%)	1 st
35-44	10	12	15	13	14	12	15	14	16	121 (26.89%)	2 nd
45-54	10	11	12	9	10	9	11	7	8	87 (19.33%)	3 rd
55- Above	4	1	2	2	3	4	3	1	2	22 (4.89%)	5 th
Sex											
Male	21	23	25	27	21	22	19	20	23	201 (44.67%)	2 nd
Female	29	27	25	23	29	28	31	30	27	249 (55.33%)	1 st
Marital Status											
Married	25	23	28	23	30	27	29	28	30	243 (54.00%)	1 st
Unmarried	20	20	19	20	16	21	16	18	15	165 (36.67%)	2 nd
Divorced	0	1	1	0	1	0	1	2	1	7 (1.56%)	5 th
Separated	2	3	1	2	1	0	1	0	1	11 (2.44%)	4 th
Widowed	3	3	1	4	2	2	3	2	3	23 (5.11%)	3 rd
Level of Education											
No formal Education	6	4	3	2	4	3	1	4	3	30 (6.67%)	4 th
Basic Education	17	16	20	21	21	18	17	17	20	167 (37.11%)	2 nd
Secondary Education	20	24	20	19	21	25	23	24	22	198 (44.00%)	1 st
Tertiary Education	7	6	7	8	4	4	9	5	5	55 (12.22%)	3 rd

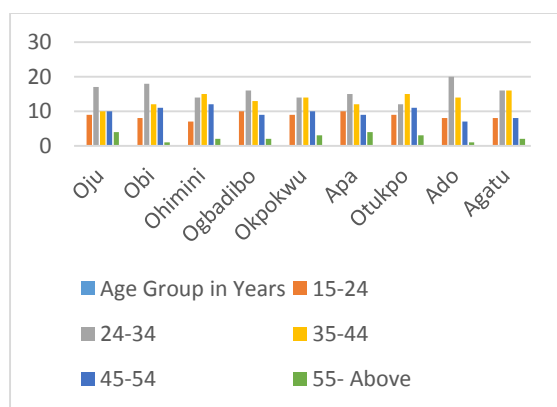


Figure 2: Age Distribution of Respondents

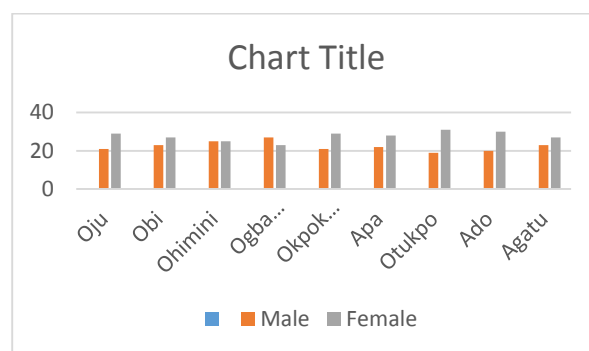


Figure 3: Distribution of Gender of the Respondents

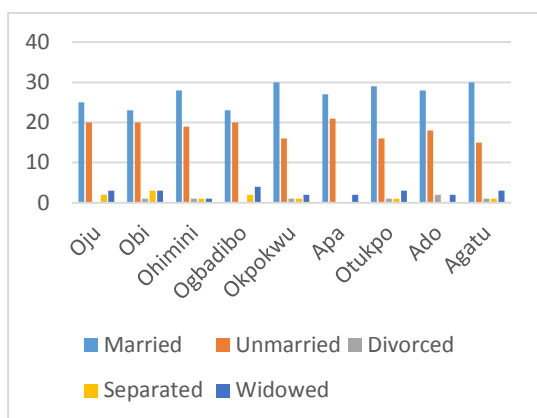


Figure 4: Marital Status of Respondents

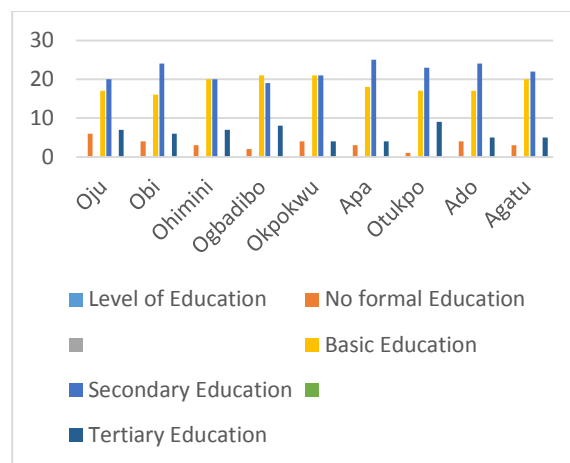


Figure 5: Educational Attainment of Respondents

Table 2: Frequency and Ranking Distribution of Causes and Symptoms of Malaria in the Study Locations

	Oju	Obi	Ohimini	Ogbadibo	Okpokwu	Apa	Otukpo	Ado	Agatu	Total Freq. n=450 (%)	Ranking
Causes of Malaria	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq		
Bad/dirty environment	10	8	9	8	11	7	6	8	12	79 (17.56%)	2 nd
Eating bad food	4	5	4	3	4	4	2	4	7	37 (8.22%)	6 th
Mosquito bites	18	20	14	19	18	14	29	21	17	170 (37.78%)	1 st
Sun heat	5	4	5	4	3	7	3	6	5	42 (9.33%)	3 rd
Getting rained on	4	2	7	6	7	7	3	3	2	41 (9.11%)	4 th
Witchcraft	1	4	3	6	4	3	3	5	3	32 (7.11%)	7 th
Cold	7	4	6	3	3	6	4	2	3	38 (8.45%)	5 th
Others	1	3	2	1	0	2	0	1	1	11 (2.44%)	8 th
Signs and Symptoms of Malaria											
High body temperature	16	12	14	12	14	15	20	17	23	143 (31.78%)	1 st
Headache	11	9	10	13	11	12	10	18	16	110 (24.44%)	2 nd
Vomiting	2	3	5	5	4	3	4	2	3	31 (6.89%)	5 th
Convulsion	4	2	1	2	4	2	1	3	2	21 (4.67%)	8 th
Change in urine colour	4	7	6	4	7	6	5	2	2	43 (9.56%)	4 th
Cold/Catarrh	7	9	8	6	4	8	5	3	1	51 (11.33%)	3 rd
Loss of appetite	3	2	4	3	2	2	3	1	2	22 (4.89%)	7 th
Body ache/joint pain	3	5	2	4	4	2	1	2	1	24 (5.33%)	6 th
Other	0	1	0	1	0	0	1	2	0	5	9 th

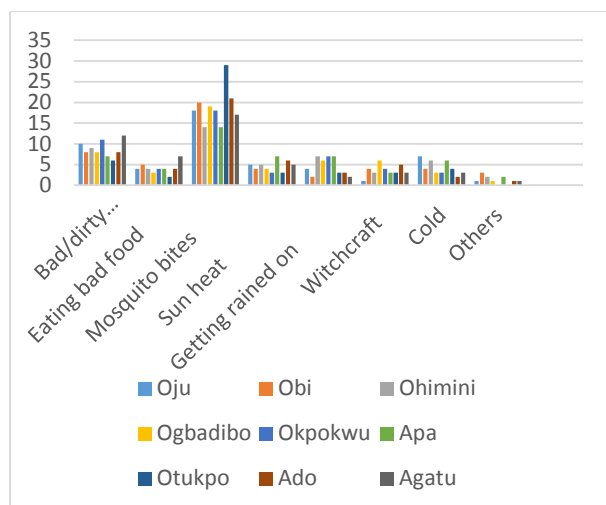


Figure 6: Knowledge on Causes of Malaria

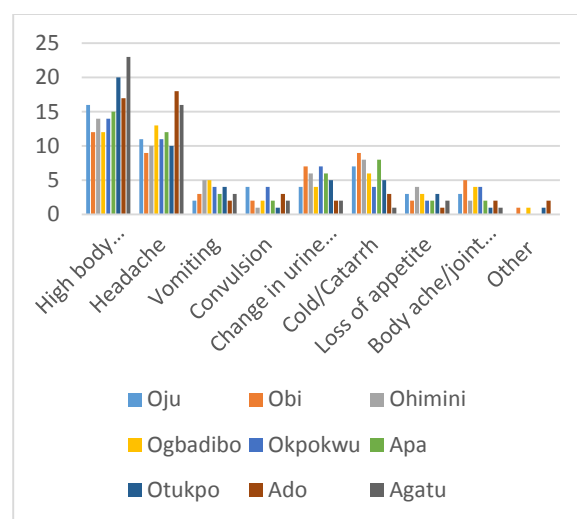


Figure 7: Knowledge about Signs and Symptoms of Malaria

Table 3: Frequency and Ranking Distribution of Preferred Treatment Practices

	Oju	Obi	Ohimi ni	Ogbadi bo	Okpokw u	Apa	Otukp o	Ado	Agat u	Total Freq. n=450 (%)	Ranking
Preferred practices	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq		
ACTs (Artemisinin-based combination treatments)	18	13	14	11	14	11	21	15	13	130 (28.89%)	1 st
Pain reliever such as Ibuprofen	7	8	7	9	9	9	6	7	9	71 (15.78%)	4 th
Analgesic such as Paracetamol	8	10	9	10	9	11	7	9	9	82 (18.22%)	3 rd
Chloroquine	7	7	4	3	8	9	6	5	4	53 (11.78%)	5 th
Local herbal medicine	10	11	13	13	9	9	8	12	12	97 (21.55%)	2 nd
Others	0	1	3	4	1	1	2	2	3	17 (3.78%)	6 th
Who usually prescribes drugs for you											
A medical doctor or pharmacist	14	13	14	12	15	13	17	14	15	127 (28.22%)	1 st
Nurse	10	10	9	12	10	11	10	11	12	95 (21.11%)	2 nd
Relations	8	7	9	8	9	7	9	8	7	72 (16.00%)	4 th
Self-prescription	9	11	11	9	10	12	9	11	9	91 (20.22%)	3 rd
Herb seller	9	8	7	8	6	5	4	5	6	58 (12.89%)	5 th
Other	0	1	0	1	0	2	1	1	1	7 (1.56%)	6 th
Tests for malaria											
Yes	20	19	20	17	22	19	29	21	18	185 (41.11%)	2 nd
No	29	31	27	31	27	29	20	28	32	254 (56.44%)	1 st
Can't remember	1	0	3	2	1	2	1	1	0	11 (2.45%)	3 rd

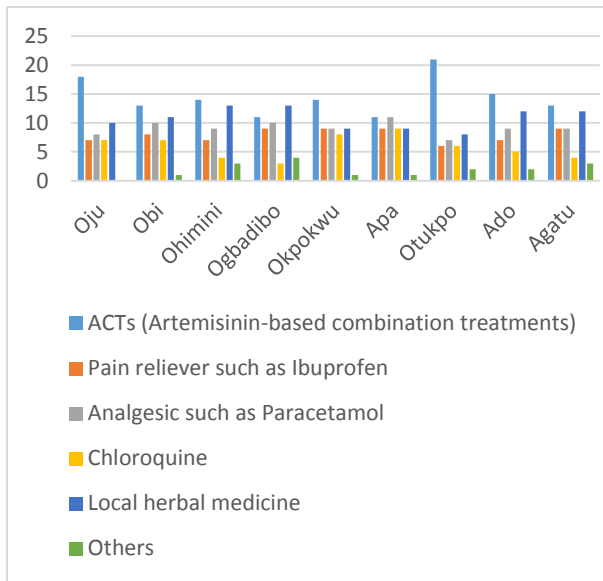


Figure 8: Preferred Treatment Practice

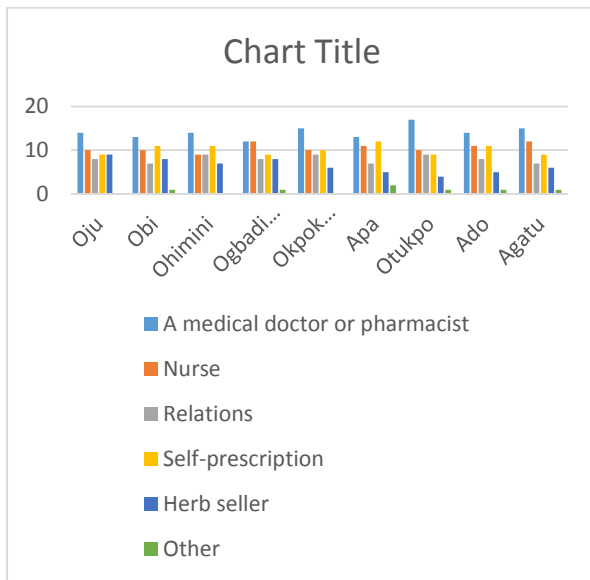


Figure 9: Source of Prescription

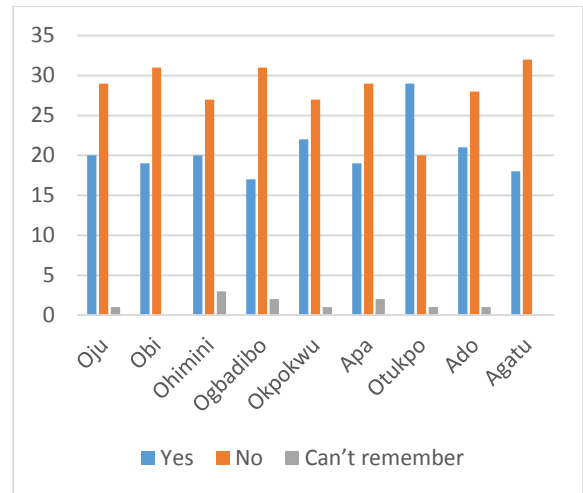


Figure 10: Malaria Test Status of Respondents

Discussion

Essential knowledge is needed to better manage any disease condition. Insufficient and inaccurate knowledge impedes progress towards reducing the burden of malaria. Dataset from this cross-sectional semi-structured survey that less than half (37.78%) of the participants made an accurate association between mosquito bites and malaria (Table 1). Higher percentages (83.4%) are reported elsewhere (de Sousa Pinto *et al* 2021,) and in a previous study in the same state, a higher percentage (84%) was also obtained (Aju-Ameh *et al*, 2016). But, all the study locations in this survey are different from the 2016 investigation of Aju-Ameh and co- researchers with the exception of Otukpo local government area. Thus, providing first time critical information on malaria knowledge, attitudes and practices from these selected communities, and lending credence to the fact that malaria is a focal disease with varying narratives. Aside from mosquito bites, respondents also believe that Witchcraft (7.11%), Eating bad food (8.22%), Sun heat (9.33%) are all causes of malaria.

Respondents' knowledge about signs and symptoms of malaria in the study locations include high body temperature (31.78%); headache (24.44%) and Cold/Catarrh (11.33%)

Discussion

From Table 1, it can be seen that the age distribution of the respondents (in years) is in the order (24-34)> (35-44)> (45-54)> > (15-24) at 31.56 %, 26.89%, 19.33%, 17.33% and 4.89% respectively. The gender distribution showed that 55.33% of the study population were male while 44.67% were females. This table also shows that 54.00% of the population are married, 36.67% are unmarried, 5.11% are widowed, 2.44% are separated while 1.56% are divorced. The table also shows the level of educational attainment of the respondents. 44.00% of the study population are educated up to secondary education level, 37.11% attained basic education, and 12.22% are educated to the tertiary education level while 6.67% have no formal education. The importance of the data on educational attainment derives

from the expectation that there should be a correlation between level of education and the risks perceptions of malaria and more scientifically proven preventive practices.

Table 2 presents data on the knowledge on the causes of malaria, perceived signs and symptoms of malaria. 37.78% of the study population perceived mosquito as the cause of malaria, 17.56 held the opinion that that malaria is caused by bad and dirty environment. 9.33% of the respondent opined that malaria is caused by heat while 9.11%, 8.45, 8.22%, 7.11% and 2.44% held that malaria is caused by getting rained on, cold, eating bad food, witchcraft and other factors respectively. Relatedly, the signs and symptoms of malaria according to the respondents are high temperature (31.78%), head ache (24.44%), cold/catarrrh (11.33%), change in urine colour (9.56%), vomiting (6.89%), body ache/joint pain (5.33%), loss of appetite (4.89%), convulsion (4.67), among others which are in agreement with available literature (Abate & Erko 2013; Singh, *et al* 2014).

Table 3 presents the ranking distribution of preferred treatment practices. Of the 450 respondents, 28.8% prefer the use of artemisinin combination therapy, 21.55 (local herbs), 18.22% (analgesics such as paracetamol), 15.78% (pain reliever such as ibuprofen), 11.78% (chloroquine), 3.78% (other treatment options). From the table too, it can be seen that 28.22% of the respondents obtained their prescription from a medical doctor pharmacist, 21.11% received their prescriptions from a nurse, whereas 20.22% engaged in self-prescription, visiting health facilities following failed self-help as reported by Chipwaza and co-authors in 2014 in Tanzania. 16.00% relied on relatives for their prescriptions while 12.8% obtained their prescriptions from herb sellers, 1.56% of the respondents obtained theirs from sources other than the ones listed here. In line with WHO treatment guideline (WHO, 2022; WHO, 2023b) Artemisinin-based combination treatments tops (ACTs-28.89%) the list of the many medications taken to combat malaria.

Prior to any form of malaria treatment, 41.11% of the study population got tested before treatment. The dataset also revealed that over 56.44% do not run any malaria test and so maybe practicing presumptive treatment, needing course correction and further investigation to unearth the reasons behind such practices. It maybe financial incapacity, absent of health. 2.45% of the respondents could not remember whether they got tested or not before embarking on treatment the last time they had malaria.

Conclusion

Disseminating accurate knowledge and increasing awareness about malaria, especially among high risk populations is a key ingredient in combating the malaria scourge; this should no longer be neglected in these settings. Radio jingles in vernacular on malaria and promotional programmes should be employed in the enlightenment activities. Introducing pictorial inserts that illiterate villagers, can use as visual aids should be considered in such campaign.

Competing interests

We declare that there is no conflict of interest with respect to this study.

Funding

The authors acknowledge the Tertiary Education Fund for graciously funding this project.

Contributions

Ogah Ekirigwe – Field studies/result compilation
Aju-Ameh C.Onyawaobi – Data-collection and result compilation
Okibe F. Godwin – Statistical analysis
Adoga S.Onyabakpa –Type setting/research assistant
Adeniyi K.A.- Questionnaire development
Obiajunwa Obichi –Proof-reading

Acknowledgement

The kind cooperation of the Vice Chancellor, Federal University of Health Sciences, Otuokpo, the Directorate of Research and Innovation, The Primary Health Care Centres in Benue South are appreciated.

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