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Research Article

Evaluating the Home Management and Prevention of Malaria in Two Local Government Areas in South-East Nigeria

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Abstract

Background: Although malaria incidence is estimated to have decreased by 41% globally, 91 countries, including Nigeria have ongoing malaria transmission. Effective treatment and prevention of malaria at home by the masses will help in rolling back malaria burden to a minimum. This study was done to evaluate the home management of malaria at 2 local government areas of Abia State, Nigeria, with a view to determining areas of improvement.

Method: This was a descriptive cross-sectional study used to evaluate the home management of malaria. Four hundred and eighty respondents, aged 18 to 52 years, who presented their babies for immunization, were serially recruited. Half of the study population (240) were selected from each of the 2 Local Government Areas (LGA) under study. The immunization exercises took place at the Aba North and Aba South local government areas of Abia State. These immunization exercises held once a week at the 2 LGAs respectively over the study period. Information sought was on the knowledge and other aspects of home management of malaria. These information retrieved were analyzed.

Results: Overwhelming majority, 465 (96.8%) of the respondents had secondary and tertiary education, 411 (85.6%) were married and 259 (53.7%) were traders. Vast majority, 426 (88.7%) had good knowledge of the symptoms of malaria. One hundred and eighty eight (39.1%) would prefer artemisinin based combination therapy for the treatment of their ill children. One hundred and ninety three 193 (40.2%) purchased antimalarial drugs over the counter (OTC). 454(94.5%) depended on the drug doses recommended by the medicine vendors they bought drugs from. A large number, 328 (68.3%), of the respondents would take their convulsing child to the hospital as first treatment option, 84(15.4%) and 34(7%) would apply palm kernel oil and herbal medications respectively. A vast majority, 439(89.5%), 429(88.1%) and 418(87.1%) would apply environmental cleanliness, indoor spraying of insecticides and netting of doors/windows, respectively, as vector control measures. While 208 (43.3%) possessed insecticide treated nets (ITN), only 163 (34%) knew how to apply these nets appropriately.

Conclusion: The knowledge of the cause, symptoms and appropriate treatment of malaria by respondents in this study is high. However, majority of them depend on the purchase of OTC drugs and dose recommendation of patent medicine vendors. Also, the rate of possession and appropriate application of ITN among the caregivers is low. It is recommended that the government should organize regular training and retraining of the patent medicine dealers. Also, there should be regular education of the citizenry on home management of malaria and the correct dose for the available antimalarial drugs.

Keywords: Home Management; Malaria; Aba North; Aba South

Introduction

Malaria remains a significant public health burden in Nigeria and sub-Sahara Africa. Malaria is the leading cause of morbidity and mortality in children aged under five in Nigeria [1]. World Malaria 2018 Report of the World Health Organization (WHO) indicates that most malaria cases in 2017 were within the African Region (200 million or 92%), followed by the South-East Asia Region (5%) and the Eastern Mediterranean Region (2%) [2] respectively. Although malaria incidence is estimated to have decreased by 41% globally between 2000 and 2015 [3,4], 91 countries includ-

ing Nigeria have ongoing malaria transmission [2]. Five countries accounted for nearly half of all malaria cases worldwide in World Malaria Report of 2018. Nigeria tops the list of countries with malaria with 25% of global prevalence [2]. It is reported that malaria prevalence (notified cases) in Nigeria in 2000 was about 2.4 million [5]. Malaria accounts for 60% of outpatient visits and 30% of hospitalizations among children under five years of age in Nigeria [6]. The disease also accounts for 25% of infant mortality and 30% of childhood mortality in Nigeria [7].

Malaria causes economic and developmental setbacks in countries where it is endemic [8]. Much financial resources are expended by the government and individuals in the treatment of malaria, particularly in the under-fives, in whom malaria accounts for significant morbidity and 3rd highest global mortality after pneumonia and diarrhea [9]. Despite efforts made to control the scourge of malaria in sub-Sahara Africa, it still remains a major public health problem.

Home management of malaria (HMM) has been devised as an effective strategy to achieve malaria control when properly implemented [10]. This implies the administration of local simple appropriate anti-malarial by care givers or trained community health workers, located close to the residential area of the citizens on early diagnosis of the illness [11]. The cornerstone of HMM implementation is the education of caregivers to enable them to recognize malaria, assess its severity, and initiate early treatment for uncomplicated malaria in the home using effective medicines that can be obtained from a community resource person, sales outlet, or health facility [11]. The initiative involves having basic knowledge of malaria including the cause, usual symptoms, the appropriate drugs and doses, simple preventive measures and prompt referral to appropriate health facility if there is no effective response after 48 hours [1]. However, this initiative which has proven to be quite effective in the control of malaria [10] remains poorly implemented in many places thereby making malaria prevalence to remain unabated [12].

This study is conducted to evaluate the home management of malaria in Aba North and Aba South Local Government Areas of Abia State. The findings could provide an insight into the implementation of HMM, reveal lapses or otherwise and be a veritable tool in formulating guidelines for its improvement.

Subjects and Method

The study was conducted from 1st February 2019 to 21st March 2019 in the Primary Health Care Centres of the Aba North and Aba South Local Government Areas (LGA) of Abia State, on their immunization days.

The two LGAs are metropolitan areas with industries, markets and higher institutions. There are 2 other healthcare institutions, one in each of the LGAs, but our study centres are more centrally located and receive heavier patronage from the inhabitants of the local government areas and neighboring LGAs.

The immunization clinics in these 2 primary care health centres hold once a week, on Tuesdays and Wednesdays respectively. An average of 45 to 50 caregivers are seen on immunization days in either of the health centres. The exercise was conducted in each of the LGAs once a week over the study period. Thirty caregivers were serially recruited for participation on each recruitment exercise in each LGA. Data was collected by 3 trained assistants under the supervision of an author. Respondents in the age group of 18 to 52 years were enlisted and data was collected by the assistants asking them questions, and documenting their answers on the pre-tested, pre-designed questionnaire written in English and interpreted in the language the respondent understood as the need arose. Pretesting of the questionnaires was conducted on 10 respondents and revision done to ensure clarity and ready comprehension of the questions by the respondents prior to the commencement of the study. Information sought was on knowledge and other aspects of home management of malaria.

Inclusion criteria were respondents 18 years and above who consented to the study. Exclusion criteria were respondents that did not give their consent.

Permission was obtained from the Director of the Department of Health of the Local Governments and the matrons in charge of the immunization clinic prior to the commencement of the study. Also, informed consent was obtained from the caregivers interviewed.

Data was analyzed using frequency tables and percentages.

Results

A total of 520 respondents were enrolled for the study out of which 40 were without adequate data and were excluded. So, 480 participants were used for further analysis.

Table 1 shows the socio-demographic characteristics of the respondents. Majority, 273 (56.8%) were in the age group of 25-34 years while 79 (16.4%) were in the age bracket of 20-24 years. Many of the respondents, 465 (96.8%), had secondary and tertiary education, and were mostly traders 259(53.7%). Again, majority 411(85.6%), of the care givers were married, 56 (11.6%) were widowed, while 13 (2.8%) were either separated or divorced. Almost all, 476(99.2%) were Christians, while only 4 (0.8%) were Muslims.

Variable	Frequency	Percentage (%)
Age (Years)		
20-24	79	16.4
25-29	106	22
30-34	167	34.8
35-39	92	19.2
39	36	7.6
Educational level		
Primary	15	3.2
Secondary	266	55.4
Tertiary	199	41.4
Occupation		
Trading	259	53.9
Civil servant	115	24
House wife	54	11.2
Student	35	7.2

Table 1: Sociodemographic characteristics of respondents.

Many, 421(87.7%) of the respondents agreed that malaria is caused by mosquito bite, while 59 (12.3%) mentioned other causes.

Table 2 below shows that majority of the care givers knew that fever, loss of appetite, vomiting and body aches were symptoms of malaria while only 214 (44.5%) were aware that seizure is a symptom. Majority, 193(40.2%) would purchase drugs across the counter for the treatment of a febrile child; 159(35.1%) would give analgesics in the house while 97(29.3%) would take the febrile child to the hospital as a first step (Table 2).

Reasons adduced for not taking ill child initially to health facility by 383(79.7%) of the respondents were that protocols in health facilities are time consuming 154(40.2%); cost consideration 148(38.6%); and misunderstanding of the severity of the illness, 81(21.2%).

Knowledge of Malaria Symptoms	Frequency	Percentage (%)
Fever	474	98.8
Loss of appetite	473	98.6
Vomiting	471	98.2
Body ache	426	88.7
Convulsion	214	44.5
Initial step taken when malaria is suspected		
Purchase drug across the counter	193	40.2
Give analgesics at home	159	33.2
Take to appropriate health facility	97	20.3
Take to church	47	9.8
Give herbal medication	42	8.8

Table 2: Knowledge of management of malaria.

Amongst the respondents, 188 (39.1%); 98(20.5%) and 78(16.3%) preferred artemisinin based combined therapy, sulfadoxine-pyrimethamine, and 4-aminoquinolones respectively, when purchasing antimalarial for a febrile child (Table 3).

Antimalarial	Frequency	Percentage (%)
Artemisinin – based combination therapy	188	39.1
Sulfadoxine-Pyrimethamine	98	20.5
Dihydroartemisinin-piperaquine	52	10.8
4-aminoquinolone	78	16.3
Artesunate	26	5.4
Quinine	26	5.4
Halofantrine	12	2.4
Total	480	100.0

Table 3: Types of Antimalarial drug purchased for treatment of febrile illness.

Overwhelming majority 454(94.5%) of the respondents relied on the dose of anti-malarials as administered by the patent medicine dealer or the pharmacist, while only 26 (5.5%) were aware of the appropriate antimalarial dose to be given to the febrile child.

Table 4 shows that taking a febrile child with seizure to the hospital was the first line of action for majority of the care givers, 328 (68.3%). Other options are shown in Table 4 below.

Action	Frequency	Percentage (%)
Take to appropriate health facility	328	68.3
Apply palm kernel oil	74	15.4
Give herbal medication	34	7.0
Take to church	26	5.4
Insert mouth gag	18	3.9
Total	480	100.0

Table 4: Home management of seizures.

Environmental cleanliness, 430(89.5%); residual indoor spraying, 424(88.4%); netting of windows and doors, 418(87.1%) were the leading malaria preventive measures applied by the respondents. However, only 163(34%) of them knew how to apply ITN (Table 5).

Measure	Frequency	Percentage (%)
Indoor spraying	424	88.4
Netting of windows	418	87.1
Environmental cleanliness	430	89.5
Possession of ITN	208	43.3
Regular use of ITN	163	34
Use of preventive drugs	36	7.4

ITN = Insecticide treated net.

Table 5: Preventive measures applied by respondents.

Discussion

Our study revealed that a vast majority of the respondents were knowledgeable in the cause and symptoms of malaria. However, only 44.5% of the caregivers were aware that convulsion could be a symptom of malaria. Respondents displaying good knowledge of malaria has been reported previously [1,12]. In our study this could be explained by the fact that all our respondents were mothers and 96.8% of them had secondary and tertiary education. Also, health education on prevailing health issues is given to them prior to the commencement of immunization exercise.

However, only 20.3% of our respondents would take their ill children to an appropriate health facility as the first line of action, while greater proportion would resort to purchasing drug over the counter or giving analgesics at home. Only a small proportion of caregivers taking their ill children to the hospital as an initial step as noted in our study has been reported severally previously [12-14]. Having to wait for too long before being attended to was the major reason adduced by our respondents for patronizing over the counter (OTC) sales of medications. It was similarly the main excuse adduced by caregivers in another study [1]. However, other reasons given by caregivers in the other study were absence of doctors in the health facility and far location of the facility from their residence [1]. High cost of drugs in hospitals and underestimating the potential seriousness of the illness were other reasons given by our respondents.

The commercial city of Aba is a hob of trading and small scale enterprises with most of the citizens preoccupied with their business and eagerly avoiding whatever takes much of their time away from their work. They therefore resort to purchasing OTC drugs initially for the treatment of their ill children, which is much less time consuming. However, those selling OTC drugs in most places in Nigeria including our place of study do so without appropriate doctor's prescription. Often, there is inappropriate administration of drugs with regard to the disease and dosage by the untrained patent medicine dealers [15,16]. There is therefore urgent need to regularly educate the general populace on the dangers of patronizing untrained patent medicine dealers for the purchase of drugs for their ill children.

The government should also organize regular seminars, workshops and training for the patent medicine dealers before licensing them. Additionally, they should be required to display their current license prominently for easy sighting by customers before allowing them to do business.

Also, the idea of giving only analgesics at home to a febrile child and hoping to achieve a cure of the illness is inappropriate. Caregivers should be educated to administer analgesic simultaneously with appropriate anti-malarial. They should be informed that delays in giving appropriate anti-malarial could make uncomplicated malaria progress to severe disease which could be life threatening [12].

Our study revealed that 8.8% of the caregivers gave herbal medication to their ill children as a first line measure. The administration of herbal medication to ill children by the caregivers has been noted severally in previous studies [17-20]. This is a dangerous practice as some herbal medications have been noted to have deleterious effects on the liver and other organs of the body [21]. Also their dosage is often not regulated and the preparation can be unhygienic in many settings [19]. Administering them can complicate the child's illness and should be regularly discouraged.

Our study also showed that a proportion of our respondents took their ill child to church. The general populace should be educated that malaria is a disease that results from mosquito bite and requires prompt treatment with anti-malarials to achieve a cure. Not giving the appropriate antimalarial promptly results in delay which could make the illness worse.

Our study also revealed that 44.5% of our respondents recognized seizure as a symptom of malaria, with 68.3% of them taking a convulsing child to the hospital as an initial step. Recognition of seizure as symptom of malaria was not a response from caregivers in previous studies [1,20] in contrast to our report. This could be due to the fact that our study was conducted on respondents who brought their children to immunization clinic where they were usually given a health talk on prevailing health issues prior to the onset of the exercise. Hence, they were better informed than the respondents in the other reports where the study was conducted on members of the community, in their home settings or worship places.

In contrast to our study, respondents in other studies [22-24] more often resorted to other treatment modalities, often harmful, in managing a convulsing child, unlike most of our respondents who would bring their convulsing child immediately to the hospital. Our respondents may have taken this appropriate step most probably because they must have received appropriate health education on regular attendance to the immunization clinic. Respondents from other studies were drawn from the general population.

Our analysis also revealed that artemisinin-based combination therapy (ACT) and sulphadoxine-pyrimethamine were the preferred choice of the majority of caregivers. This is in conformity with a previous report [1] where ACT was the choice of antimalarial for home management of malaria by respondents. However, it contrasts with another study [19] where 4-aminoquinolone was the main choice of antimalarial applied by respondents. The report where 4-aminoquinolones were mostly applied by the respondents was also one where they were selected from the general populace. The most probable reason of the right of choice of antimalarials by our respondents is their high level of education and acquisition of correct knowledge from regular health education in the course of their attendance for immunization and possibly related health activities. For home management of malaria, the ACTS and artesunate-amodiaquine formulations are noted to be the most appropriate antimalarials [25]. The 4 aminoquinolones and most other oral antimalarials have been reportedly abandoned for the reason of drug resistance or toxicity [26].

Our study also revealed that residual indoor spraying, netting of doors and windows and environmental cleanliness, including removal of vessels containing stagnant water constituted major prevention measures applied by our respondents. However, the regular use of insecticide treated bed nets was the response by only 34% of our respondents. In consonance with our report, previous studies [1,19] have noted the popular application of the vector control measures noted above by a majority of their respondents. Also, low rate of acquisition and even lower rate of regular use of acquired ITN has been noted in previous reports [27]. Insecticide-treated nets are one of the proven cost-effective components of malaria prevention through vector control approach. Appropriate use of ITN is shown to reduce malaria transmission by about 90% [28]. ITN has been reported to be an effective vector control measure only when applied correctly [27].

Conclusion

The knowledge of the cause, symptoms and appropriate treatment of malaria by respondents in this study is high. However, majority of them depend on the purchase of OTC drugs and dose recommendation of patent medicine vendors. Also, the rate of possession and appropriate application of ITN among the caregivers is low.

Recommendation

It is therefore recommended that the government at state and local council levels should organize regular workshops, seminars and training of the patent medicine dealers, grant them certificates thereafter and require them to display these prominently for easy sighting in their business place by customers. Customers should be educated to look out for such licenses before patronizing them. Also, the general populace should be regularly educated on home management of malaria via communal assemblies and various communication media with emphasis on the essence, efficacy, proper application and source of supply of insecticide treated bed nets.

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