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Knowledge of Causes and Complications of Malaria, among Residents of a Rural Community in Enugu State, Southeast Nigeria

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Abstract

Malaria disease is widespread in occurrence, killing about 482,000 under-five children globally and with approximately 3.4 billion people at risk. Malaria accounts for about 60% outpatient attendance in health facilities, 30% childhood mortality, and 11% maternal mortality in Nigeria, and the prevalence is more in the rural areas. Misconceptions and myths still exist about the causes and complications of malaria. This observational, cross-sectional study in which 296 respondents participated, was conducted during a medical outreach programme organized in a rural community. Over 50% of the respondents are sixty years and above, with most of them being females (70.3%), and less than half of the respondents (47.0%) having formal education. More than half of the respondents (59.1%) knew that mosquito bite is the cause of malaria, but very large numbers also believe that malaria could be caused by rat bite, excessive oil or ground nut consumption, and working under the sun. The overall knowledge of respondents on causes of malaria was found to be 33.3%. Less than half of the respondents (41.6%) knew that the complications of malaria are commoner among children and pregnant women. Most of them also did not know that malaria can lead to abortion, anaemia, and convulsion in children. Total knowledge on malaria complications was 40.4%. More malaria awareness creation activities targeted at the rural communities in Enugu state by governments and non-governmental organizations shall greatly impact positively on the malaria control/elimination activities in the state.

Keywords: Knowledge, Causes, Complications, Malaria, Rural Area.

Introduction

Malaria is a protozoal disease caused by infection with parasites of the genus Plasmodium. The parasite is transmitted to man through the bite of female Anopheles mosquito[1]. There are four species of Plasmodium parasite that infect man. These are Plasmodium falciparum, Plasmodium vivax, Plasmodium malariae and Plasmodium ovale[2]. Plasmodium vivax has a wider geographic distribution, but Plasmodium falciparum is most prevalent in the African continent. The risk of infection with Plasmodium vivax is quite low in West African sub-region because of the absence in many African populations of the Duffy gene[3]. Duffy gene produces a protein necessary for P. vivax to invade red blood cells. Human cases of malaria have been recorded due to P. knowlesi. This specie usually causes malaria among monkeys in certain areas of South East Asia[3]. Malaria disease is widespread in occurrence, killing about 482,000 under-five children globally and with approximately 3.4 billion people at risk[4]. Most (90%) malaria death occurs in the World Health Organization (WHO) African Region[5]. It is estimated that in Nigeria malaria cases are about 100 million, with over 300,000 deaths in a year. Malaria accounts for about 60% outpatient attendance in health facilities, 30% childhood mortality, and 11% maternal mortality in Nigeria[6,7]. Morbidity and mortality associated with malaria disease adversely affects economic and social development of many countries in Africa, including Nigeria[8]. It has been documented that the prevalence of malaria is more in the rural areas[9].

In as much as knowledge about mosquito bite being the cause of malaria is high, many people still however believe that staying long in the sun, drinking bad water, eating too much fatty and oily food, chewing maize stalk, exposure to cold, physical exertion, bedbugs, and poor nutrition cause malaria[10-15]. The incidence of malaria infection usually increases in the rainy season because of increased mosquito breeding sites such as stagnant water, and many vegetation where the vector can rest[16]. Malaria complications, if untreated include; anaemia, cerebral malaria, and pregnancy-related problems such as abortions, stillbirth, prematurity and low birth weight[16].

People's knowledge about malaria comes into play in determining their participation in malaria control activities[17]. This knowledge about malaria is frequently not taken into consideration in developing malaria control programmes[18]. This knowledge varies from one community to another[19]. Assessing the knowledge of the causes and complication of malaria disease among community members, especially in the rural areas; shall go a long way in ensuring that appropriate interventions for malaria control/elimination in those communities are developed.

This study is aimed at assessing the knowledge of the causes and complications of malaria among rural dwellers in a community, Enugu state, Southeast Nigeria. It will also assess their perception of some of the misconceptions that still exist about the causation of malaria disease. Findings from this study shall be useful to governments and non-governmental organizations in Nigeria, when developing malaria intervention programmes.

Materials and Methods

Nigeria is made up of thirty six states, among which is Enugu state. Enugu state has seventeen Local Government Areas, and is bounded on the west by Anambra State, Ebonyi State on the east, while on the south are Abia and Imo States. Benue and Kogi States make up Enugu state boundaries on the north. Inhabitants of Enugu state are mainly of the Igbo speaking tribe[20]. During the last 2006 National population census in Nigeria, Enugu state was recorded as having a population figure of 3.26 million people[21]. Civil servants, teachers, traders, artisans and private sector workers are the major groups of people that inhabit the urban areas of Enugu state. The rural areas such as Egede community in Udi Local Government area where this study was conducted are predominantly inhabited by farmers, hunters and palm wine tappers. Some teachers that teach in the community schools also reside in the rural areas. There are two health facilities in Egede town, which are a health post and a cottage hospital which are not very functional.

This research was of cross-sectional study design. Adult residents of Egede town in Udi Local Government Area of Enugu State that were more than 19 years of age were enrolled in this research. Interviewer-administered, structured questionnaire that was pre-tested in another rural community of neighbouring Ezeagu Local Government Area, of Enugu state was the study instrument. Data was collected during a medical outreach programme in January, 2015. Data collection was done by trained ten House officers and five resident doctors. Two hundred and ninety six (296) persons participated in the study. Other studies on more malaria, diabetes mellitus, and HIV/AIDS were also done at the same time.

Quantitative analysis was done using Statistical Package for Social Sciences (SPSS) 20.0 for windows. The analysis was done in terms of the number and percentage of rural residents that have correct knowledge on causes, and complications of malaria. Approval for the study was given by the Ethical Committee, Enugu State University of Science and Technology Teaching Hospital, Park lane, Enugu. The respondents freely consented to participating in the study.

Results and Discussion

Socio-demographic variable: Over 50% of the respondents are sixty years and above, with 28.4% of them being seventy years and above. As low as 23.3% of the respondents are below fifty years of age. Most of the respondents are females (70.3%), and 83.1% are married. Less than half of the respondents (47.0%) had formal education. The major occupation of the respondents was farming (70.9%), followed by petty trading (12.8%).

Knowledge of respondents on causes of malaria: More than half of the respondents (59.1%) knew that mosquito bite is the cause of malaria. Many (62.8%) believed that rat bite causes malaria, 86.5% believed that working under the sun causes malaria, 87.5% said malaria is caused by eating too much groundnuts, while 90.2% said that it is caused by eating too much oil. About half of the respondents (50.7%) knew that dirty environment enhances the breeding of mosquito, and the same percentage of respondents also knew that stagnant water in containers serve as breeding sites for mosquito. The overall knowledge of respondents on causes of malaria was found to be 33.3%.

Knowledge of respondents on complications of malaria: Less than half of the respondents (41.6%) knew that the complications of malaria are commoner among children and pregnant women. Less than half also knew that malaria can lead to abortion (36.8%), anaemia (41.2%), and convulsion in children (41.9%). Overall knowledge on complications of malaria was found to be 40.4%.

Discussions: Most of the respondents being fifty years and above (76.7%), females (70.3%), married (83.1%), and without formal education (53.0%) does not represent the correct socio-demographic picture of the entire community. The study was carried out during a medical outreach programme where most of the patients that presented belonged to the older and less educated class. The patients presented largely with Non-communicable diseases which usually affect the older age group. Many of the younger residents of the study rural community probably did not have the patience to wait for the medical outreach interventions such as health talk and screening exercises before consulting a doctor.

Though 59.1% of respondents knowing that malaria is caused by mosquito bite may be considered good knowledge among residents in the study rural community, it is a lot less than 93.0% knowledge level found among residents of a rural community in Botswana[22]. This could be due to sample selection method used for the different studies, or a true reflection of the knowledge that malaria is caused by mosquito bite. The oldest adult present in randomly selected households were interviewed in the Botswana study, and it could have recorded significant number of younger and more educated respondents, if the interviewer visited during the period that the older head of the household was away to the farm or market. This finding about mosquito bite being the cause of malaria is similar to 55.1% found in a rural community in northern Nigeria[23]. Another study in an urban area in Nigeria recorded a clearly higher level of knowledge (89.5%) with respect to mosquito bite causing malaria[24]. This could be an indication that in Nigeria, malaria control/elimination activities are more in the

urban areas, thus empowering urban residents more with malaria information than rural residents. Again, high level of knowledge (85.2%) about mosquito bite causing malaria found in Ethiopia[12] could be as a result of good proportion of the respondents being between the ages of 18 - 24 years. People in this age bracket will probably have better information about malaria, than the older respondents that participated in our study. The lower level of knowledge (47.5%)[25] recorded in Tanzania among heads of household in a rural community, about mosquito bite causing malaria, may however be a clear pointer that more information about malaria are available to residents of our study area, when compared to residents of the reported Tanzanian community. Over 60% of respondents in the Tanzanian study are between 20 to 39 years of age, hence probably ought to have a better knowledge of malaria.

Myths about the causation of Malaria has been documented in the past, but only 37.2% of the respondents knew that malaria is not transmitted by rat bite. Though in some other developing countries such as Ghana[11], fatty/oily food and heat from the sun are believed by many rural dwellers to cause malaria; the revelation in this study that only 13.5%, 12.5%, and 9.8%, of respondents respectively knew that working under the sun, eating too much ground nuts, and eating too much oil do not cause malaria, is worrisome. This highlights the urgent need to work towards dispelling the myths among rural dwellers about malaria causation. This study revealed poor knowledge of 33.3% among the studied rural residents, on the key causes of malaria.

It is of utmost importance to recognize and promptly treat malaria so as to prevent developing complications[26]. As far back as the year 2002, 86% of respondents in an urban setting in Uganda knew that malaria complications are commoner among pregnant women and children[27], while only 41.6% of rural dwellers in this study thirteen years later had the same knowledge. This may be an indication that malaria awareness activities are implemented more in urban areas of Uganda, when compared to rural areas in Enugu state, southeast Nigeria. However, much lower levels of knowledge on abortion being a complication of malaria (17.8% and 10.0%), were found among primigravidae women attending Ante-natal care in urban health centre in Malawi[28], and pregnant women attending Ante-natal care in a rural community also in Malawi[29] respectively; when compared to our finding in this study (36.8%). These low levels of knowledge found among pregnant women in Malawi is a bit curious, since pregnant women are given health talk in most Antenatal clinics in developing countries. It could be that these pregnant women in Malawi were interviewed during their first visit, before they were exposed to the usual health talk given during the Ante-natal visits. Though the knowledge on abortion being a complication of malaria in pregnancy in this study is clearly higher than the findings in Malawi, it is still considered poor. Our finding of 41.2% of respondents in this study having knowledge of anaemia as a complication of malaria is low compared to 89.0% found in Uganda[27], and 62.0% found in Ekiti state of Nigeria. The Ugandan finding was among residents of an urban community; hence the respondents were possibly exposed to more information on complications of malaria than the rural dwellers in our study. In the Ekiti state of Nigeria study however, the respondents were migrant farmers, hence possibly could have had a similar exposure to the respondents in this study. The apparent better knowledge of anaemia as a complication of malaria demonstrated by respondents from Ekiti state could be due to majority of respondents in this study being older. Only 41.9% of respondents in this study knew that convulsion in children could be as a result of malaria, while 84.0% of respondents in a similar study in Uganda had knowledge that malaria could cause convulsion in children[27]. This apparent superior knowledge found in Uganda could be attributable to the study being done among urban residents that probably have better exposure to malaria information. Overall, the knowledge on complication of malaria among the respondents in this study was poor (40.4%).

Table-1
Socio-demographic variables

		Frequency (N = 296)	**Percent (100%)**
Age range (in years)	19 and below	2	0.7
	20 – 29	13	4.4
	30 – 39	22	7.4
	40 – 49	32	10.8
	50 – 59	70	23.6
	60 – 69	73	24.7
	70 and above	84	28.4
Sex	Female	208	70.3
	Male	88	29.7
Marital status	Married	246	83.1
	Single	14	4.7
	Divorced/Separated	2	0.7
	Widowed	34	11.5
Educational Status	No formal Education	157	53.0
	Primary level	88	29.7
	Secondary level	37	12.5
	Tertiary level	9	3.0
	Postgraduate level	5	1.7
Occupation	Farmer	210	70.9
	Petty trader	38	12.8
	Artisan	15	5.2
	Retired Civil Servant	14	4.7
	Teacher	16	5.4
	Unemployed/student	3	1.0

Table-2
Knowledge on causes of malaria

Questions	Correct response (N = 296)	Percent (100.0%)
Malaria is transmitted by mosquito bite	175	59.1
Malaria is transmitted by rat bite	110	37.2
Malaria is caused by working under the sun	40	13.5
Malaria is caused by eating too much groundnuts	37	12.5
Malaria is caused by eating too much oil	29	9.8
Dirty environment enhances the breeding of mosquito	150	50.7
Stagnant water in containers serve as breeding sites mosquito	150	50.7

Overall knowledge on causes of Malaria = Correct response/Possible correct response X 100% = 691/2072 X 100% = 33.3% (poor knowledge).

Table-3
Knowledge of respondents on complications of malaria

Question	Correct response (N = 296)	Percent (100%)
Malaria complications is commoner in children and pregnant women	123	41.6
Malaria can lead to abortion in pregnant women	109	36.8
Malaria can lead to anemia	122	41.2
Malaria can cause convulsion in children	124	41.9

Overall knowledge on complications of malaria = Correct response/Possible correct response X 100% = 478/1184 X 100% = 40.4% (poor knowledge)

Conclusion

Misconceptions and myths about causes and complications of malaria still exist, especially among rural dwellers. Since these misconceptions and myths could adversely affect malaria control and elimination programmes in these rural areas, it is of paramount importance that findings from this study be taken into consideration in planning and implementing malaria control/elimination activities in the rural areas in Nigeria. This study revealed poor knowledge on the causes and complications of malaria, among people who dwell in a rural community of Enugu State, Nigeria. More malaria awareness creation activities targeted at the rural communities in Enugu state by governments and non-governmental organizations shall greatly impact positively on the malaria control/elimination activities in the state.

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