

Myths and facts on malaria: A pilot study of community oriented resource persons in rural communities in Anambra, South-east Nigeria

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ABSTRACT

Early access to diagnosis and effective treatment is one of the major strategies for reducing the burden of malaria. This is however negatively affected by myths and misconception about malaria. The present study aims at determining the prevailing myths and facts about malaria in a developing country. A cross sectional descriptive study was done in 2014 among 284 Community-Oriented Resource Persons in 3 rural communities in Anambra, southeast Nigeria using pre-tested semi-structured questionnaires and FGD (Focus Group Discussion) Guide. Of 284 participants, 204 (71.8%) were females. Majority (38%) fell within the age range of 31 to 40 years and most respondents (83.1%) were married with Christians accounting for 94.4% while those who had secondary education were 58.5%. Trading was the predominant occupation (52.5%). Almost 60% knew the actual cause of malaria. On the other hand, 57 (20.1%) believed malaria was caused by consumption of oil while 9 (3.2%) respectively identified excessive heat and physical stress as causes of malaria. Most identified the symptoms and route of transmission of malaria. Almost 86% believed malaria could be treated by use of orthodox drugs while the use of local herbs such as dogonyaro (4.9%) and removal of pins before hospital treatment (7.4%) were identified as ways of treating malaria. Respondents with primary education were significantly more likely ($P < 0.05$) to believe the myths than facts of malaria. In conclusion, knowledge of the facts and myths of malaria were high. However, knowledge in facts was significantly higher than belief in myths ($\chi^2 = 135.46$; P value = < 0.01). Respondents with higher educational status had better knowledge of the facts than myths of malaria.

Keywords: Myths, facts, malaria, community resource persons, Nigeria.

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INTRODUCTION

Malaria is a febrile disease caused by infection with parasites of the genus *Plasmodium* and transmitted to man by certain species of infected female *Anopheles* mosquitoes (Park, 2009). The clinical features of malaria vary from mild/uncomplicated to severe/complicated according to the species of parasite present, the patients state of immunity, the intensity of infection and also the presence of concomitant conditions such as malnutrition or other diseases (Park, 2009). According to WHO (2000), malaria affects over 40% of the world's population mostly Africans which accounted for 86% of the

estimated 247 million annual episodes of malaria in 2006. About 91% of all malaria deaths occur in Africa (WHO, 2006, 2008). Malaria accounts for 25 to 45% of all outpatient clinic attendances, between 20 and 45% of all hospital admissions and causes 17% of under-five mortality in African Region (WHO, 2006, 2008).

Malaria is estimated to reduce economic growth by an annual average rate of 1.3%, mainly through absenteeism from work or school in high endemic areas (Four horsemen of the Apocalypse, 2003; Gallup and Sachs, 2001). Unfortunately, people in the lower socio-

economic classes are most exposed to malaria and its complications because of inadequate housing, poor living conditions and limited access to health care which further worsen their poverty (Gallup and Sachs, 2001). Children under five and pregnant women bear the greatest brunt of this disease as a result of immature or reduced immunity (CDC, 2014).

Key malaria interventions include: using insecticide treated nets (ITNs), indoor residual spraying (IRS), intermittent preventive treatment of malaria in pregnancy (IPTp) and effective malaria treatment using potent antimalarial drugs such as Artemisinin-based combination therapy (WHO, 2008; Yamey, 2000). Malaria is rarely medically diagnosed in African countries as most people who present with fever receive antimalarial treatment (Nuwahw, 2001). As reported by Sirima et al. (2003), pregnant women typically may not have any symptoms in endemic areas but can still come down with anaemia, placental infection, and low birth weight of the newborns. Early access to diagnosis and effective treatment is one of the major strategies for reducing the burden of malaria and this depends on the people's understandings and beliefs about the disease (Tanner and Vlassoff, 1998). Poor health service delivery and ignorance associated with cultural beliefs have been identified as contributory to childhood mortality due to malaria. It has been suggested that social and cultural determinants of behaviour may account for the gap between awareness of modern health measures and health-seeking behaviour (Feyisetan et al., 1997).

A number of myths exist about malaria causation, treatment and methods of prevention and these go a long way in determining the people's attitudes towards the disease and their health seeking behaviour. According to Merriam-Webster, myth can be defined as an idea or story that is believed by many people but is not true. On the other hand, a fact is something that has really occurred or is actually the case (Wikipedia). Some of the myths have been there from ancient times when malaria was attributed to fever causing demons to the present times where in some communities, malaria is believed to be caused by physical exertion, ants and consumption of palm oil (Neghina et al., 2010; Awaga and Charest, 2004). Furthermore, some people particularly in tropical Africa believe that 'malaria will always be with us, which deters efforts targeting its elimination (Campbell, 2014). On the other hand, Srinivas (2012) reported that malaria is believed to confer life long immunity in some communities which may discourage them from using available preventive methods. Regarding malaria management myths, some people are of the opinion that every fever is malaria and since malaria is well known to doctors that a blood test is redundant (Srinivas, 2012). In addition, the treated nets are believed in some communities to cause suffocation while others are afraid to use the nets because they resemble a structure used to cover dead bodies during burials (Awaga and Charest, 2004). Understanding the myths of malaria existing in the

community will help educators and health care providers modify their plans for decreasing the spread of malaria while incorporating them into the design and implementation of malaria prevention and control programs (Dean, 2005; Appiah-Darkwah and Badu-Nyarko, 2011). This is very important as diverse and unique beliefs and cultures have made African continent not to see any success in the global eradication program (Appiah-Darkwah and Badu-Nyarko, 2011).

This study aims at determining the facts and myths about malaria and its management among community oriented resource persons (CORPs) in selected communities of Anambra State. Findings will be of immense help in the development of appropriate health education interventions for the control of malaria at the community level. It will also assist policy makers in planning and implementation of culturally acceptable programmes aimed at malaria prevention.

MATERIALS AND METHODS

This was a descriptive cross sectional study conducted in February, 2014 among 284 Community Oriented Resource persons in 3 rural communities (Ozubulu, Ihiala and Osumenyi) in Anambra Central senatorial zone. The study area was located in South Eastern Nigeria with a population of about 158,885 people. Anambra State is mainly inhabited by Igbo speaking people who are mostly Christians. Most members of the population are farmers, artisans and civil servants. The CORPs were selected by their various communities on volunteer basis. Ethical permit for the study was obtained from Ethics Committee of University of Nigeria Teaching Hospital Enugu while informed consent was obtained from the respondents. The study instruments were a semi-structured questionnaire and a Focus Group Discussion (FGD) guide which were pre-tested among CORPs working in another program in a neighbouring state. The questionnaire covered the demographic characteristics of respondents as well as the knowledge and myths about malaria while the FGD guide focussed mainly on the myths and facts of malaria. A total of three FGDs (one in each of the three communities) were conducted.

All the 300 CORPs who were undergoing a training program were recruited for the study. However, only 284 who gave informed consent participated. Quantitative data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 16. Frequencies and percentages were presented as tables. Level of significance was $P < 0.05$ and the confidence interval was 95%. Manual content analysis of the qualitative data was done.

RESULTS

Although 300 people were selected for the study, only 284 responded giving a response rate of 94.7%. Of these 284 participants, 204 (71.8%) were females (Table 1). Majority of the respondents (38%) fell within the age range of 31 to 40 years and most (83.1%) were married, Christians (94.4%) and had secondary education (58.5%). Trading was the predominant occupation practiced by the respondents (52.5%).

Almost 60% of respondents correctly knew the cause of malaria. On the other hand, 57 (20.1%) believed malaria

Table 1. Demographic variables of volunteers.

Variables	Frequency N = 284	Percent
Sex		
Female	204	71.8
Male	80	28.2
Age group (years)		
21 – 30	34	12.0
31 – 40	108	38.0
41 – 50	75	26.4
51 – 60	44	15.5
61 – 70	16	5.6
71 and above	7	2.5
Marital status		
Married	236	83.1
Single	13	4.6
Widowed	35	12.3
Religion		
Christianity	268	94.4
African Traditional Religion	14	4.9
Others	2	0.7
Educational status		
Uncompleted primary	16	5.6
Primary	64	22.5
Secondary	166	58.5
Tertiary	38	13.4
Occupation		
Teacher	10	3.5
Retired civil servant	20	7.0
Trader	149	52.5
Farmer	60	21.1
Unemployed	28	9.9
Others	17	6.0

was caused by consumption of oil while 9 (3.2%) respectively identified excessive heat and physical stress as causes of malaria. Also, most believed that the main symptoms of malaria were headache (81.3%) and fever (62.7%) while 8.1% claimed that excessive dreaming was a symptom of malaria. On transmission of malaria, majority (88.7%) identified the bite of infected female anopheles mosquito as the route while some felt that eating contaminated food (2.1%) and exposure to sunlight (3.5%) were the main routes of transmission. Two hundred and forty four (85.9%) respondents believed that malaria could be treated by use of orthodox drugs like ACT while the use of local herbs such as

dogonyaro (4.9%) and removal of pins before hospital treatment (7.4%) were identified as ways of treating malaria (Table 2a). The belief in facts about malaria is significantly higher than that in myths ($\chi^2 = 135.46$; P value = < 0.01) (Table 2b)

Respondents with primary education were significantly more likely (P < 0.05) to believe the myths than facts of malaria while it is vice versa for those with secondary or tertiary education (Table 3). On the contrary, there was no statistically significant association between occupation and belief in myth/facts about malaria and its management (Table 4).

Focus group discussions (FGDs)

From the qualitative study, 15 (62.5%) participants also identified fever as a major symptom of malaria and that malaria is caused by the bite of female mosquitoes. According to one male participant from Osumenyi: *'malaria is caused by female mosquito, dirty surroundings and drinking water that is not boiled.'* In the FGD at Ozubulu, one young woman explained: *'malaria is caused by eating sweet and oily foods like pears, groundnuts and melon soup. It is also caused by doing strenuous work under the sun for a long time such as working in the farm from morning to evening'*

On the seriousness of the disease, most (70.8%) agreed that it is not a serious ailment since virtually everybody suffers and recovers from malaria every now and again *'but could only be dangerous if not treated early when it can enter the brain and may make the person to have abnormal behavior, convulsion and 'lack of blood'*. They also believe that everyone has equal tendency to suffer malaria as mosquito does not discriminate when it bites and the best options for prevention remain using mosquito nets, boiling drinking water and keeping the environment clean while Artemisinin-based Combination Therapy (ACT) is the best treatment for malaria.

DISCUSSION

Malaria is a deadly parasitic infection with a widespread epidemiology in tropical African countries where it kills millions of people every year particularly pregnant women and under-5 children. Fortunately, many effective preventive methods as well as curative remedies are available. However, myths and misconceptions about malaria are still prevalent in many developing countries and these limit access to and utilization of available preventive and treatment options. A high percentage of the respondents in the present study identified malaria parasite through mosquito bite as the cause of malaria. Present finding is slightly lower than results from similar studies in Ghana (Adongo et al., 2005) and Nigeria (Arogundade et al., 2011) where knowledge of the cause

Table 2a. Myths and facts of volunteers on malaria.

Questions	Responses (284)	
	Yes	No
Causes of malaria include the following		
Malaria parasite	169 (59.5)	115 (40.5)
Too much oil	57 (20.1)	227 (79.1)
Sunlight	14 (4.9)	270 (85.1)
Excessive heat	9 (3.2)	275 (96.8)
Physical stress	9 (3.2)	275 (96.8)
Others	26 (9.2)	258 (90.8)
The common symptoms of malaria include the following		
Headache	231 (81.3)	53 (18.7)
Fever	178 (62.7)	106 (37.3)
Nausea/Vomiting	167 (58.8)	117 (41.2)
Chills	59 (20.8)	225 (79.2)
Too much dreaming	23 (8.1)	261 (91.9)
Fainting	25 (8.8)	259 (91.2)
Cerebro-vascular accident	7 (2.5)	277 (97.5)
Malaria parasite is transmitted through the following		
Bite of an infected anopheles mosquito	252 (88.7)	32 (11.3)
Staying under the sun for a long time	10 (3.5)	274 (96.5)
Eating too much groundnuts and pear	8 (2.8)	276 (97.2)
Eating too much oil	7 (2.5)	277 (97.5)
Eating contaminated food	6 (2.1)	278 (97.9)
Others	1 (0.4)	283 (99.6)
What is the recommended treatment for malaria?		
Taking orthodox drugs like ACT	244 (85.9)	40 (14.1)
By removing pins before going to hospital for treatment	21 (7.4)	263 (92.6)
Taking herbs like dogonyaro	14 (4.9)	270 (95.1)
By eating more food	3 (1.1)	281 (98.9)
Others	2 (0.7)	282 (99.3)
Prevention of malaria can be by		
Avoiding bites of infected mosquitoes by the use of nets and insecticides	266 (93.7)	18 (6.3)
Reduction of the consumption of oily foods like pears and groundnuts	6 (2.1)	278 (97.9)
Avoidance of exposure to excessive sunlight	6 (2.1)	278 (97.9)
Protecting our foods from being contaminated	4 (1.4)	280 (98.6)
Others	2 (0.7)	282 (99.3)

Table 2b. Comparison of myths and facts on malaria by volunteers.

Malaria epidemiology	Myth (%)	Fact (%)
Cause	115 (40.5)	169 (59.5)
Symptoms	50 (17.6)	234 (82.4)
Transmission	32 (11.3)	252 (88.7)
Treatment	40 (14.1)	244 (85.9)
Prevention	18 (6.3)	266 (93.7)

$\chi^2 - 135.46$; P value = < 0.01.

Table 3. Level of education and relationship to beliefs in myth/facts about malaria management.

Ability to identify the following	No formal/primary education N = 80 (%)		Secondary/tertiary education N = 204 (%)		χ^2 (P value)	Odds ratio
	Belief in myth	Belief in fact	Belief in myth	Belief in fact		
	The cause of malaria	41 (51.3)	39 (48.3)	74 (36.3)		
Route of transmission	18 (22.5)	62 (77.5)	14 (6.9)	190 (93.1)	14.05 (< 0.01)*	3.9
The symptoms of malaria	33 (41.3)	47 (58.7)	43 (21.1)	161 (78.9)	11.93 (< 0.01)*	2.6
Treatment of malaria	19 (23.8)	61 (76.2)	21 (10.3)	183 (89.7)	8.60 (< 0.01)*	2.7
Prevention of malaria	10 (12.5)	70 (87.5)	8 (3.9)	196 (96.1)	7.12 (< 0.01)*	3.5

*Significant level is < 0.05.

Table 4. Occupation and relationship to beliefs in myth/facts about malaria management.

Ability to identify the following	Teacher/retired civil servant N = 30 (%)		Trader/farmer/unemployment N = 254 (%)		χ^2 (P value)	Odds ratio
	Belief in myth	Belief in fact	Belief in myth	Belief in fact		
	The cause of malaria	12 (40.0)	18 (60.0)	103 (40.6)		
Route of transmission	1 (3.3)	29 (96.7)	31 (12.2)	223 (87.8)	2.11 (0.15)	0.25
The symptoms of malaria	9 (30.0)	21 (70.0)	97 (38.2)	157 (61.8)	0.77 (0.38)	0.69
Treatment of malaria	6 (20.0)	24 (80.0)	34 (13.4)	220 (86.6)	0.97 (0.32)	1.61
Prevention of malaria	2 (6.7)	28 (93.3)	16 (6.3)	238 (93.7)	0.006 (0.94)	1.06

of malaria was 79 and 77.7%, respectively. It is however higher than the report by Agu and Nwojiji (2005) in southeast Nigeria where knowledge of cause of malaria was only 35.2%. The improvement could be attributed to increase in malaria awareness gained over time from various on-going malaria control campaign programs.

Incidentally over 40% of respondents believe in various causes of malaria other than malaria parasite. Similar myths on malaria causation such as working under the sun, eating too much palm oil, witchcraft among others have been recorded (Adongo et al., 2005; Arogundade et al., 2011; Agu and Nwojiji, 2005; Tobin-West and Asuquo, 2013). The existence of this level of misconception about malaria among these selected, mostly educated community resource persons implies an even higher prevalence of malaria myths within the general population of the communities. This calls for concerted efforts towards educating people particularly in this part of the country on malaria causation with emphasis on dispelling all myths and misconceptions about the disease.

The commonest symptoms of malaria identified were headache (81.3%), fever (62.7%), nausea and vomiting (58.8%). Several other similar studies reported high knowledge of malaria symptoms (Adongo et al., 2005; Agu and Nwojiji, 2005). This is not surprising because virtually all the respondents must have had several episodes of malaria since they live in sub-saharan Africa where malaria is endemic and so should be able to recall the symptoms they manifested. In addition, most of the

respondents are married and may also have children who would have had bouts of malaria in the past. Therefore the problem in Nigeria is not lack of knowledge of symptoms of malaria but in peoples' belief that every headache or every fever is malaria leading to over-diagnosing (mainly presumptive) and over-treatment of the disease which has attendant consequences (Oladosu and Oyibo, 2013).

The use of orthodox drugs like ACT was recommended by majority (85.9%) as the best option for malaria treatment. This is contrasted by other studies where almost 75% sought alternative treatment reserving anti-malaria drugs for emergencies (Nuwaha, 2001; von Seidlein et al., 2002). These studies were conducted several years ago when ignorance and myths were quite high compared to the present times where various media are being used to promote the use of ACT for malaria treatment. Some respondents also acknowledged using herbs like dogonyaro (4.9%) as the treatment option. This is common practice in most developing countries as observed by Dean (2005). 'Removal of pins' before going for hospital treatment was recommended by 7.4% of the respondents. This unusual practice is commonly seen in many rural communities in Anambra State and entails taking a febrile person to a traditionalist (who is a specialist in pin removal) for physical examination to determine the presence of pins in the person's body. If pins are found, they are removed before the person is allowed to go for medical treatment. This is because it is believed that giving an injection to any person infested

with pins will result in an instant death. The practice is not only dangerous as the rigorous physical examination could be overwhelming particularly for a child with severe malaria but also causes unnecessary delays in accessing essential medical treatment leading ultimately to late presentation. This could be likened to other often useless and sometimes harmful traditional malaria treatment practices seen in many African countries (Menka, 2004).

Most respondents (93.7%) knew that avoiding mosquito bite by use of nets and insecticides can be used to prevent malaria. However, a small proportion said prevention can be through reduction of oily food consumption (2.1%) and avoidance of exposure to excessive sunlight (2.1%). Knowledge of methods of prevention of a disease is positively correlated with peoples' perception of the cause of the disease. This was observed in Kenya where people do not see the need for nets when they believe malaria is caused by rain (Dean, 2005).

Expectedly, there is a significant relationship between belief in malaria myth and educational level. Respondents with lower educational qualification tend to believe more in malaria myths. This goes to show the importance of literacy in disease knowledge and management. Researchers in Ghana also identified a relationship between knowledge of the cause of malaria and educational status where 63% of those with tertiary education believed that malaria is caused by mosquito bite as against 45% of those with no formal education (Appiah-Darkwah and Badu-Nyarko, 2011). In the same study, a high proportion (50%) of those without formal education believed that malaria is caused by unclean environment. On the other hand, Agu and Nwojiji (2005) in their study did not find any statistical association between level of education and knowledge of the cause of malaria while a study in Ethiopia reported higher LLIN (Long-lasting insecticide nets) ownership among the illiterates (Woyessa). The earlier study thus highlights the importance of perceived risk of malaria.

CONCLUSION AND RECOMMENDATIONS

Respondents' knowledge on the cause and symptoms of malaria was high. Belief in malaria myths was also high, but comparatively lower than belief in facts. There was an association between educational qualification and belief in malaria myths. It is therefore important for more educational enlightenment program on malaria causation, prevention and treatment strategies to be conducted from time to time to improve people's knowledge especially at the community level. This will go a long way to help control strategies that are ongoing.

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