

Treatment Seeking Practices for Malaria: A Household Case of Uasin Gishu County, Kenya

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Abstract

Introduction: Malaria is among the leading cause of morbidity and mortality in Kenya. Malaria treatment seeking practices in epidemic areas in Africa such as Kenya are not well studied. The study aimed at assessing the treatment seeking practices in residents of Uasin-Gishu County following Malaria infection. **Methods:** Study was cross sectional study design. Stratified random sampling was used to identify 341 study participants. Principal component analysis was applied to compute the wealth index and the chi-square tests of association were carried out to determine factors associated with choice of treatment. Multivariate logistic regression determined predictors of treatment seeking practices. $P < 0.05$ significance level was used during the study. **Results:** Fever was reported in 62.8% of all households; 94% sought treatment for the fever. Commonly assessed facility was government health facility (63%), chemists (15%), private clinics (12%) and traditional healers (2%). Educated persons' were 8.7 fold more likely to seek care from a private hospital. Employed and business owners were 4.1 fold more likely to purchase medicines from chemists. There were significant negative associations between wealth index and education level and seeking care in a government health facility. Respondents in the middle and fourth quintile with tertiary education level rarely sought care from a government health facility respectively. **Conclusion:** Treatment practices among households were: through government health institutions, private/clinics and chemists. Wealth index, age category of household heads, education level and occupation influenced treatment seeking practice. **Reccomendation:** There is need for the government for the government to strength community-based interventions and health facilities.

Keywords: Malaria, world health organization, fever

Introduction

Malaria remains an important cause of death, especially in sub-Saharan Africa. Self-medication with anti-malarial drugs is commonly practiced which raises issues to policy-makers. The toll of human suffering and death, malaria saps the work force and drains the economy(Das et al., 2013). Although malaria affects people of all age groups, under five years and pregnant women living in malaria prone areas are most vulnerable(Rowe et al., 2013).

The distribution of malaria is mainly in the tropical areas and in resource poor countries especially in Africa(Karyana et al., 2016; Nabyonga Orem, Mugisha, Okui, Musango, & Kirigia, 2013). World malaria report of 2011, indicates that 216 Million malaria cases and close to 655 000 deaths were reported in 2010. Globally Malaria mortalities have dropped by more than 25% since 2000 and by 33% in WHO regions in Africa. In Africa, every minute a child dies of malaria and this accounts for 22% of childhood mortalities.

Currently in Kenya, malaria accounts for up to 30 % of all day care attendance and 19% per cent are in-patients (Programme, 2016). The huge burden of disease poses a big challenge as well as a strain on already overburdened and under equipped health systems across SSA(*World malaria report 2017*, 2017).

Intensifying use of long-lasting insecticide nets (LLINs), combination therapies (ACTs) and indoor residual spraying (IRS) provides the best opportunity to control and, in some countries, malaria elimination is achieved (World malaria report 2017, 2017). To speed up the progress in control of malaria, the 2005 World Health Assembly devised the Roll Back Malaria (RBM) targets defined in four key interventions; insecticide-treated nets (ITNs) for those people at risk, appropriate anti-malarial drugs for probable and confirmed cases, IRS in cases of households at risk, and intermittent preventive treatment in pregnancy (in high-transmission areas) (*World malaria report 2017*, 2017).

Achieving and maintaining malaria control is key to meeting the Millennium Development Goals (MDGs), One of which relates to malaria, AIDS and other infectious and chronic diseases. Other goals specifically are those related to child and maternal health will be difficult to reach in endemic countries without substantially reducing the malaria burden.

In the recent years there have been changes of national malaria drug policies in most countries in malaria risk areas in Africa, mostly from Chloroquine to Sulfadoxine-pyrimethamine and now to ACTs. Malaria parasites, in particular *Plasmodium falciparum*, developed resistance to these earlier anti-malarial drugs necessitating the changes. Currently, WHO recommends ACTs as the first-line drugs for treatment of malaria (World malaria report 2017, 2017). Current debates focus on feasibility goals such as

eradication of malaria. Though such an (long-term) agenda is welcome, there is need to ensure prompt access to effective malaria treatment to the children less than five years, the most vulnerable, in SSA if the mortality reduction goals set by RBM partners and/or the United Nations (UN) MDGs are to be realized.

Malaria still remains a major health problem in Kenya and accounts for an estimated 18% of outpatient consultations and 10% of hospital admissions based on data from The routine health information system(USAID, 2016). Malaria transmission and infection risk in Kenya is determined largely by altitude, rainfall patterns, and temperature. Therefore, malaria prevalence varies considerably by season and across geographic regions(Sumba, Wong, Kanzaria, Johnson, & John, 2008; USAID, 2016).

All four species of human Plasmodium: *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium ovale* and *Plasmodium vivax* occur in Kenya. *P. falciparum* causes the most severe form of the malaria and accounts for 98 % of all malaria cases. In Kenya vectors known to be spreading malaria are; *An. gambiae* complex (*An. gambiae*, *An. arabiensis*, *An. merus*) and *An. funestus*. The malaria vector distribution in the country is not uniform due to variation in climatic factors, particularly temperature and rainfall(Nabyonga Orem et al., 2013; USAID, 2016; World Health Organization, 2015).

Prompt and appropriate malaria treatment response is essential for effective malaria management and reduces severe morbidity and mortality. An understanding of treatment -seeking practices enables communities and the formal system of health care to design interventions that cater to a specific population. A concern of current malaria control programmes is the significance of delayed treatment in morbidity, mortality and transmission of malaria. If people could recognize early symptoms of Malaria and take appropriate actions like seeking treatment, mortality is reduced.

Treatment seeking practices from previous studies shows that people with malaria-like symptoms are more likely to resort self-medication at as they wait for a time during which they monitor their progress (Naing et al., 2017; Romay-Barja et al., 2016). This allows them to minimize expenditure incurred as a result of the sickness. The decisions to seek treatment from either visiting a private health care practitioner, a government health centre or going to a hospital are made when the situation gets serious. Know-how, duration of sickness, the anticipated cost of medication, and a patient's judgment of the seriousness of sickness determines their choice of type of treatment (Uzochukwu & Onwujekwe, 2004)

Statement of the problem

Despite the resulting high case fatality rates, malaria treatment seeking patterns in Malaria prone areas of Africa and especially Kenya are not well

studied. Studies that have examined malaria treatment seeking practices in Kenya reveal that determinants such as symptom severity, literacy level and proximity to medical facility affects the likelihood of seeking medication (Sumba et al., 2008). It has been forwarded that fever is likely to prompt suspecting people to seek treatment in health services, self-medication through pharmacies and drug sellers is the most common response when people experience symptoms that could be malaria (Ayieko, Akumu, Griffiths, & English, 2009; Deressa, 2007; Sumba et al., 2008).

Rapid screening of malaria and adequate diagnosis are essential for preventing complications and most deaths. But even in areas served well with good to health care services; it's common for patients to present late to the health facility or fail to attend. In a study done in Nandi, Kenya, results documented that although health care facilities provide primary care for malaria, ordinary shops are still frequent alternative source of care. Individuals with signs consistent with malaria are not often given anti-malarial drugs at these shops, resulting to lower recovery rates (Sumba et al., 2008). It is in this light that this study aimed to bring out an understanding of treatment-seeking practices at the household level among residents in this highland region. The evidence will inform public health policies and systems in designing appropriate interventions that cater to specific populations with the overall aim of reducing the burden of malaria in the general population.

Materials and methods

Study area and population

The study was carried out Uasin Gishu County in western Kenya. This is a highland-2073 Altitude malaria epidemic area with 24 % Prevalence. The study area has a total population of 25 082 individuals according as per Kenya National Census Survey 2010. Subsistence and dairy farming are the main economic activities of the area. The study area is well served with several Health centres, private hospitals and a National referral Hospital situated in its Headquarters. The government facility offers free malaria screening and treatment services. Study population composed of selected household in the region with the target being household heads (male or female) above 18 years.

Study design

The study adopted a cross-sectional study design to determine treatment seeking practices post malaria episode. Study was conducted between the month on September and October following a short rainy season. 341 study participants were selected through stratified sampling then proportionately divided into two strata's to meet the target population and finally specific household were selected through simple random sampling.

An interviewer-administered questionnaire was used to gather

socio-demographic and fever episodes among others factors. Completed questionnaires were checked for completeness, coded, entered into Microsoft Access then exported SPSS v.22.1 for further management and analysis.

Frequency tables were generated for categorical variables while mean/median was generated for continuous variables (after normality tests). Bivariate analysis was done using chi-square test for associations between the dependent variables (treatment seeking practices for malaria) and the independent variables (Socio- demographic characteristics, economic factors, and health facility related factors). Multivariate analysis by logistic regression was done to test the strength of associations between the dependent and the independent variables and the resulting odds ratios was used to interpret the associations. Statistical significance was considered when p value was less than 0.05.

The wealth index was constructed based on household's data ownership of domestic goods; residential characteristics; water source; sanitary facilities; and other characteristics that relate to a household's socioeconomic status as is done by demographic and health surveys. To construct the index, each of these assets were assigned a factor score generated from principal component analysis (PCA), standardization of the resulting asset scores was done in relation to a standard normal distribution, having zero and one as mean and standard deviation respectively. A score for each asset was assigned to each household, and then the scores were cumulated for each household. Ranking was done according as per score of the resided household. The sample was then divided into wealth indices from one to five lowest to the highest respectively. Single asset index was developed based on the data from the overall sample. The outcome of interest was measured as choice of treatment for malaria a categorical variable, which was the main dependent variable. Independent variables such as, marital status, occupation age, education level, and wealth index were measured and later tested if they influenced dependent variable.

Ethical considerations

Institutional Research Ethics Committee (IREC) of the Moi University and Moi Teaching and Referral Hospital gave approval for the study before commencement. Further Permission was sought from Ministry of Public Health and Sanitation and Ministry of Medical services authorities in the study area as well as the area chiefs. The respondents' consent was sought and they were assured of privacy and confidentiality and further that the information would not be used in any way against them.

Results

A total of 341 questionnaires were administered with 100% response. Socio-demographic variables were measured including occupation, marital status, age, education level, occupation and religion of the respondents. 72% of the respondents were female. Mean age (SD) of the respondents was 32.7 (11.46) ranging between 18 and 80 years. Majority of respondents were between the age group of 20-29 years, 164 (48.1%), while those above the age of 50 were the least, 36 (9.9%).

Two hundred and sixty four (77.4%) were married and 77 (22.6%) were single or formally married. In regard to education level, 207 (60.7%) of the respondents had achieved at least a primary education, 104 (30.5%) had secondary education, while 30 (8.8%) had a higher education. Majority of the respondents were protestant Christians, 202 (59.2%).

According to the study findings, wealth was evenly distributed with about 20.4% of the total population falling in the lowest wealth line.

Using fever as a proxy to malaria respondents were asked if anyone in the household had fever two months preceding the survey. 62.8 %(n=214) reported episodes of fever with the two months preceding the survey and 94 %(n=201) sought treatment. Seeking professional medical care through the government health facility was the mostly preferred (63%), Chemists (15%), private clinics (12%), retail shops (8%) and traditional healers (2%) and finally community health workers (1%).

On Treatment Seeking Attitudes and Perceptions of Seriousness of Fever; over 90% of respondents believe that anti-malarial drugs can cure fever of which 73% of the respondents agreed that fever management was affordable and available whereas 68% believe that herbal remedies should be used first in the treatment of fever.

Table 1.0 : Socioeconomic and socio-demographic differences in choice of healthcare

	Government Facility (%)		Private hospital (%)		Chemist (%)		Retail shop (%)		Traditional Healer (%)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Wealth index:										
1	36 (72)	14 (28)	4 (8)	46 (92)	6(12)	44(88)	1 (2)	49 (98)	2 (3)	48 (97)
2	32 (66)	16 (34)	2 (4.2)	46 (95.8)	6 (12.5)	42 (87.5)	7 (14.6)	41 (85.4)	0 (0)	48 (100)
3	20 (53)	18 (47)	5 (13.2)	33 (86.8)	8 (21.1)	30 (78.9)	3 (7.9)	35 (92.1)	1 (2.6)	37 (97.4)
4	17 (43)	22 (57)	5 (12.8)	34 (87.2)	7 (17.9)	32 (82.1)	5 (12.8)	34 (87.2)	1 (2.6)	38 (97.4)
5	22 (56)	17 (44)	9 (23.1)	30 (76.9)	4 (10.3)	35 (89.7)	1 (2.6)	38 (97.4)	0 (0)	39 (100)
Chi-square (p-value)	9.2 (0.05*)		8.3 (0.08)		2.7 (0.61)		8.1 (0.08)		3.1 (0.53)	
Age										
<=30	66(56.4)	51(43.6)	16 (64)	9 (36)	22 (18.8)	9 5(81.2)	7(6)	110(94)	2(1.7)	115(98.3)
>30	61(62.9)	36(37.1)	115 (60.8)	74 (39.2)	9(10.3)	88 (89.7)	10(10.3)	87(89.7)	2(2.0)	95(98)
Chi-square (p-value)	0.92(0.33)		0.09 (0.76)		3.8 (0.04)		1.55 (0.21)		0.03 (0.85)	
Marital status:										
Currently married	97 (57)	73 (43)	23 (13.5)	147 (86.5)	27(18.9)	143(91.1)	12 (7)	158 (93)	4 (2.4)	166 (97.6)
Single& formally married	30 (69.2)	14 (31.8)	2 (4.4)	42 (95.6)	4 (9)	40 (91)	5 (11.4)	39 (88.6)	0 (0)	44 (100)
Chi-square (p-value)	1.79 (0.18)		2.73 (0.09)		1.30 (0.25)		0.88 (0.34)		1.0 (0.30)	

Continued.... Socioeconomic and socio-demographic differences in choice of healthcare

	Government Facility (%)		Private hospital (%)		Chemist (%)		Retail shop (%)		Traditional Healer (%)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Education Level										
No Education & primary	91(64.5)	50(35.5)	12(8.5)	129(91.5)	21(8.5)	120(91.5)	11(7.8)	130(92.2)	3(2.1)	138(97.9)
Secondary	33(56.9)	25(43.1)		52(89.7)	10(17.2)	48(82.8)				57(98.3)
Higher	3(20)	12(80)	6(10.3)	8(53.4)	0(0)	15(100)	4(6.9)	54(93.1)	1 (1.7)	15(100)
			7(46.6)				2(13.3)	13(86.7)	0 (0)	
Chi-square (p-value)	11.3 (0.003*)		19.6 (0.000)		2.9 (0.23)		0.68(0.70)		0.34 (0.84)	
Occupation										
Farmers	22 (80)	9 (20)	2 (6.5)	29 (93.5)	1 (3.2)	30 (96.8)	4 (12.9)	27 (97.1)	1 (2.9)	34 97.1)
Employed	25 (55.6)	20 (45.3)	3 (6.7)	42 (93.3)	11 (19)	34 (81)	2 (4.4)	43 (95.6)	1 (2.2)	44 (97.8)
Unemployed	59 (64.1)	33 (35.9)	11 (12)	81 (88)	8 (8.7)	84 (91.3)	9 (9.8)	83 (90.2)	2 (2.2)	90 (97.8)
Business	21 (53.8)	18 (46.2)	5 (12.8)	34 (87.2)	10(25.6)	29(74.40)	1 (2.6)	38 (97.4)	0 (0)	39 (100)
Others	0 (0)	7 (100)	4 (57)	3 (43)	1 (14.3)	6 (85.7)	1 (14.3)	6 (85.7)	0 (0)	7 (100)
Chi-square (p-value)	13.5 (0.007*)		15.9 (0.02*)		13.1 (0.008*)		4.1 (0.38)		1.2 (0.86)	

Persons with a higher education were 8.7 (95% CI=2.86-27.07) fold more likely to seek care from a private hospital than persons with no & primary. Employed respondents and business owners were 4.1 (95% CI 1.57-10.86) and 3.8 (95%CI=1.52-9.91) more likely to purchase drugs from chemists while seeking care for malaria as opposed to farmers.

There were significant negative associations between wealth index and education level and seeking care in a government health facility. Respondents in the middle and fourth wealth index and had tertiary level of education were 47% (AOR 0.47 95% CI=0.22-0.99), 36% (AOR 0.36 95% CI= 0.16-0.77) and 17% (AOR 0.17 95% CI=0.04-0.70) were unlikely to seek care from a government health facility respectively. However, there was insignificant association between occupation and seeking care in a government health facility or private clinic, and between age and seeking care in a chemist. Sixty three per cent of study respondents stated that lack of money hinders them from seeking care at health facilities.

Discussion

More than half of study participants reported evidence of fever. This concurred with a study findings in Kipsamoite, Nandi where 53% of adults reported having experienced fever six months prior to the survey(Sumba et al., 2008) and of which 94% of them sought at least one form of care, similar to a study findings in Nigeria (Seck et al., 2017).

Studies have demonstrated that response to malaria is dependent on accessibility to a health facility, severity of the disease, expected quality of care, cultural and traditional beliefs, and knowledge of the symptoms (Karyana et al., 2016; Nabyonga Orem et al., 2013). Also found that malaria treatment usually starts at home and referrals if home treatment is not successful (Deressa, 2007; Ladner, Davis, Audureau, & Saba, 2017), which in turn results to delayed in treatment from a proper care provider. Significant delays before seeking care for fever was well documented in this study where an average of 5 days could elapse before any form of care was sought. This delay was much higher compared to a study done in Nigeria (4 days). A study in Ethiopia found that, only 13% of respondents sought treatment within 24 hours of onset of symptoms(Deressa, 2007) which is the best time for management of fever.

This study revealed that several choices made by households in seeking care for treatment after experiencing fever. The most preferred choice for treatment of fever was a government health facility where 63% of respondents sought care. Therefore confirming that seeking care at government owned facilities is the most preferred by most people in the region as it concurs with a study findings in Nandi with 66 %(Sumba et al., 2008) but differed from the situation in malaria endemic regions(Win et al., 2017), where drugs from local shops constituted the most popular first response to perceived malaria(Das et al., 2013).

Significant variation exists in levels of socio-economic and socio-demographic factors. The study revealed that households from the lowest wealth index were likely to use a government health facility more than those

from higher wealth index ($p=0.05$). This is contrary to findings from a study done in Nigeria where a larger population did not use health centers where user fees were lower, no fees was charged for consultation (Uzochukwu & Onwujekwe, 2004). Respondents with higher education were most likely to visit private hospitals than respondents from other education levels. It is possible that these individuals have good jobs as they are well educated and can thus afford private hospitals. Statistically significant association existed between occupation and seeking care from chemists. Previous study findings have demonstrated that many drugs vendors at such outlets have no formal trainings as pharmacists or medics hence resulting to wrong dispensation, incorrect drugs or inappropriate courses based on a person's ability to pay. On contrary, life-threatening health problems such as malaria may be mistreated, and regrettably unregulated and over use of such antibiotics may lead to drug resistance. Upon missing to failing to attend to health care when ill they miss not only proper diagnosis but also miss out on important treatments that may only be offered at such health facilities, such as co-artem (Artemether–lumefantrine combination therapy) for malaria.

Of those who sought treatment from the informal sector (retail shops), majority were from the lower wealth index. This may be because health facilities are more scattered in rural areas which hinders access to all. Care seeking from traditional herbalists in this area occurred, although only 2% admitted to such. There was likelihood of under-reporting of the use of traditional herbs in this study, as the respondents may shy revealing such information to this health seeking oriented study.

Conclusion

The study findings concluded that the main treatment-seeking practices was mainly by visiting professional medical care, such as government health institutions and private hospitals. Further it was agreed and believed that anti-malarial drugs could treat fever promptly. Education level and wealth index level too determined the type of health facility attended by people with fever.

Recommendations

Public health programmes to combat malaria should incorporate traditional healers, retail shop owners and pharmacy staffs play a big role in treating malaria within this community.

There is need to emphasize on improving early and prompt diagnosis and treatment with effective anti-malarial drugs in order to curb morbidities and mortalities associated with this disease. People should be mobilized on the importance of early diagnosis with effective anti-malarial drugs within 24 hours of symptom onset.

Further research should be conducted to understand reasons why people prefer a particular choice for treatment of fever in order to inform public health policy planning.

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