

## Community perception of malaria and its influence on health-seeking behaviour in rural Ghana: a descriptive study

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### Abstract

**Background.** Approximately 300 million clinical episodes of malaria occur globally, out of which an estimated 1 million persons die every year. Ninety per cent of these malaria deaths occur in tropical Africa. Despite decades of great effort to control malaria in Ghana, it still remains a serious public health problem affecting all ages.

**Materials and Methods.** A descriptive cross-sectional study was conducted to assess local perceptions on malaria and health seeking behaviour among inhabitants in the Kassena-Nankana district in the Upper East Region of Ghana. A total of 120 respondents were included in the study through a systematic random sampling procedure of households. The head of a household or his/her partner was interviewed using a structured questionnaire.

**Results.** The majority (65%) of respondents had awareness about malaria and linked it to mosquito bites. They had knowledge about malaria through health workers including health professionals from the Navrongo Health Research Centre (NHRC) (83.3%), radio (7.3%), television (5.8%), friends (1.7%) or newspapers (0.8%). The results also showed that people incorporated traditional and modern elements into their concept of the disease and treatment strategies.

**Conclusions.** Perceptions and health-seeking behaviour are critical to the success and sustainability of malaria management and control. Understanding local concepts of illness and their influence on health care-seeking behaviour can complement existing knowledge to help develop more effective malaria control interventions in these communities.

## 1 Introduction

Malaria remains a major public health problem [1] despite decades of control and prevention efforts. It remains a major cause of morbidity and mortality in the tropical regions of the world [2]. Globally, there are approximately 300 million clinical cases and about one million deaths due to malaria each year [2]. Over 90% of the disease burden occurs in sub-Saharan Africa [3,4] affecting predominantly children and pregnant women [3] who have little access to health care [5].

The malaria burden faced by African countries continues to be a challenge for governments. In Ghana, malaria is a major cause of illness and death, mainly among children and pregnant women [6]. According to the Ministry of Health [6], 13.7% of all admissions of pregnant women in 2006 was due to malaria. Out of this percentage, 9.0% died from the disease [6]. Malaria in Ghana is consistently reported as the leading cause of outpatient visits, hospitalisation and death in health facilities. Despite considerable efforts in past decades to eradicate or control malaria in Ghana, it is still the most prevalent and most devastating disease, in spite of being both completely preventable and

treatable.

In spite of several initiatives to combat malaria in Ghana, it remains hyper-endemic and impedes social and economic development. It is estimated to cause the loss of about 10.6% Disability Adjusted Life Years (DALYs) in Ghana and costs an equivalent of up to 6% of the country's Gross Domestic Product (GDP) annually [6].

Case management has been and continues to be one of the main strategies for the control of malaria in Ghana. However, reported malaria cases represent only a small proportion of the actual number of episodes as the majority of people with symptomatic infections are treated at home and are, therefore, not reported [7].

Malaria protective measures are related to knowledge and beliefs of people [2]. Studies pertaining to knowledge, attitudes and practices on malaria and health seeking behaviour have not received much attention in Ghana. Understanding the local perceptions of malaria and its influence on health seeking behaviour from the community's point of view is critical and relevant to the development of health education messages that increase community awareness of the problem as well as the importance of early diagnosis and prompt treatment of malaria.

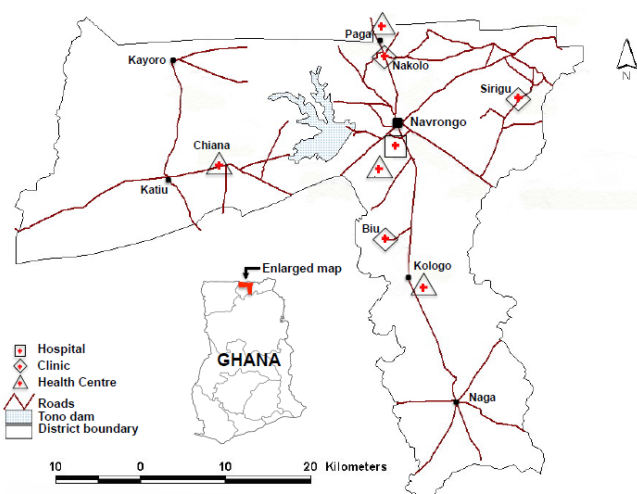
## 2 Material and methods

The study was carried out in ten communities in the Kassena-Nankana District in the Upper East Region with Navrongo as its capital. It is one of the nine district capitals in the Upper East Region with Bolgatanga as its regional capital. The district is about 30 km away from the regional capital and bordering Burkina Faso and served by the Navrongo Health Research Centre (NHRC), which runs the Navrongo Demographic Surveillance System (NDSS) covering an area of 1,675 km<sup>2</sup>. Kassena-Nankana has a population of 152,000 with 30,000 households [8].

There are two main climatic seasons, the wet (June-October) and dry (November-May) season. Average annual rainfall is 850–950 mm with the highest level recorded in August; temperatures range from 18°C–45°C. The district is largely rural, with only 9.5% of the population living in urban quarters. The main occupation of the people is subsistence farming (90%) of predominantly millet, groundnuts and small herds of livestock, complemented by retail trading.

The main religious faith is animism but Christianity is gradually becoming more prominent, especially amongst women [9]. Currently, about a third of the people are Christian, 5% are Muslim and the rest professes traditional religion [9]. This reliance on traditional beliefs hampers the utilisation of health services.

Malaria transmission is by *Anopheles gambiae* s.l. and *An. funestus*, and peaks at the end of the wet season [10]. Prevalence of *Plasmodium falciparum* is significantly higher in the wet than in the dry season [11]. The district has one hospital, three community clinics, and four health centres that are strategically located in selected communities to serve all parts of the district (Fig. 1).



**Figure 1.** Map of Kassena-Nankana district showing the location of health facilities [modified after Owusu-Agyei et al. [26].

## 2.1 Study design

The study was cross-sectional, descriptive and community-based, and involved households across the district (n=120). Ten households were selected from each of 12 clusters [12] through a systematic random sampling. The male or female head of each of the selected households was interviewed. In the absence of the head, the spouse was interviewed. The selected respondents were requested to voluntarily sign an informed consent form for participation in the study. The study method was quantitative, using a structured questionnaire designed and administered by the investigator and two trained fieldworkers. To make it easy to understand and administer the questionnaire it was translated into the local language by an expert. The household survey instrument collected detailed information on demographic characteristics, the household head's knowledge and perceptions about malaria transmission, causes, and treatment seeking patterns and behaviour, control and preventive measures. To ensure reliability and validity of the data, a pre-testing of the questionnaire was carried out with 24 households heads prior to actual data collection in an area different from the study area but with similar socio-demographic patterns.

## 2.2 Ethical clearance

The study was reviewed and approved by the Scientific Review Committee (SCR) of the Navrongo Health Research Centre (NHRC).

## 3 Results

### 3.1 Socio-demographic characteristics of the respondents

The study participants consisted of 80 (66.7%) males and 40 (33.3%) females. Most of the respondents (88.4%) were Christians, followed by Muslims (5.8%), and then traditionalists/spiritualists (4.2%). The majority of the respondents (33.3%) were 18-28 years old. Few (30.8%) had received tertiary education and 10% had no formal education. Most (64.2%) respondents were married and employed in one form or another (90.8%; Table 1).

### 3.2 Knowledge about causes and transmission of malaria

Out of the 120 participants, the majority (65%) associated malaria with mosquito bites. Other reported causes were eating of oily foods (15%), the eating of sugary foods (8.3%), heat from the sun (5%) and other causes like genetic inheritance (3.3%; Table 2).

**Table 1.** Socio-demographic characteristics of respondents

Characteristic	Frequency (n= 120)	%
<i>Gender</i>		
Male	9	7.5
Female	111	92.5
<i>Age</i>		
18-28	55	46
29-39	48	40
40-49	11	9
50+	6	5
<i>Religion</i>		
Christianity	106	88.4
Islam	7	5.8
Traditionalist	5	4.2
No response	2	1.6
<i>Educational level</i>		
Primary	10	8.3
Middle/JSS	19	15.8
Secondary/Voc-Tech	32	26.7
College/Tertiary	37	30.8
Non-formal	10	8.3
None	12	10
<i>Marital status</i>		
Married	77	64.2
Single	40	33.3
Divorced	2	1.7
Widow	1	0.8
<i>Occupational status</i>		
Farming	13	10.8
Trading/business	11	9.2
Artisan	10	8.3
Government workers	75	62.5
Unemployed	11	9.2

**Table 2.** Knowledge about the causes and transmission of malaria

Cause of malaria	Frequency	%
Eating of oily foods	18	15.0
Eating of sugary foods	10	8.3
Mosquito bites	78	65.0
Genetic inheritance	4	3.3
Heat from the sun	6	5.0
Other	4	3.3
Total	120	100

### 3.3 Perceptions about signs and symptoms of malaria

Respondents were asked about the signs and symptoms that a person with malaria presents. They indicated aware-

ness of common signs and symptoms in both adults and children, as shown in Table 3. The most frequently mentioned signs and symptoms of malaria included hot body/fever (75%), vomiting (65.5%) and coldness/chills (54.4%). However, some respondents also mentioned yellowish urine (45.8%), restlessness (37.5%), loss of appetite (33.3%) or headache (8.3%) as causes of malaria.

### 3.4 Sources of information about malaria

The respondents gave a wide range of sources for information on malaria (Table 4). Health workers, including skilled health professionals from the Navrongo Health Research Centre (NHRC), were their major source (83.3%); second was radio (8.3%) followed by television (5.8%). Very little information about malaria originated from friends (1.7%) or newspapers (0.8%).

**Table 3.** Knowledge about signs and symptoms of malaria

Signs and Symptoms	Frequency	%
Hot body/fever	90	75.0
Vomiting	75	65.5
Restlessness	45	37.5
Yellow urine	55	45.8
Coldness/chills	65	54.4
Loss of appetite	40	33.3
Headache	10	8.3

**Table 4.** Sources of information about malaria

Sources	Frequency	%
Health workers/NHRC	100	83.3
Radio	10	8.3
Television	7	5.8
Friends	2	1.7
Newspapers	1	0.8
Total	120	100

### 3.5 Malaria prevention and treatment-seeking behaviour

The vast majority of respondent believe that malaria is preventable (92.3%), and 85.8% stated that they use insecticide-treated mosquito nets to protect themselves against malaria. The reasons given by those who did not own or use a bednet at the time of the survey were due to cost (10%) and/or discomfort due to heat (4.2%).

Regarding seeking treatment for malaria (Table 5), respondents who think malaria can be treated stated that they resort to managing mild and severe malaria at home by using both traditional and modern methods. Treatment

**Table 5.** Seeking treatment for malaria.

Treatment	Convenient	Less expensive	Most efficient	Total
Hospital/clinic	35 (29.1%)	20 (16.7%)	65 (54.2%)	120 (100%)
Local pharmacy	60 (50.0%)	20 (16.7%)	40 (33.3%)	120 (100%)
Herbs	40 (33.3%)	60 (50.0%)	20 (16.7%)	120 (100%)
Traditional healer	30 (25.0%)	70 (58.3%)	20 (16.7%)	120 (100%)

modalities for managing malaria included home prepared herbs such as neem or pawpaw leaves, the bark of the mahogany tree and self-medication using antimalarial drugs such as chloroquine and paracetamol as the first line of action. Some respondents, however, indicated that they resort to other treatment choices outside the home, when the first action at home fails. In our survey, the majority of the respondents (n=65; 54.2%) preferred to seek treatment from a health facility because of treatment effectiveness but considered this costly and inconvenient as compared to traditional healers, self-use of herbs or purchasing of drugs from local pharmacies for self-medication.

#### 4 Discussion

Community knowledge, attitudes and practices relating to causation, transmission, prevention and treatment are key factors influencing malaria prevention and control. These factors are becoming more important in designing and improving malaria control activities to help establish epidemiological and behavioural baselines to identify indicators for monitoring programmes. We collected information relevant to understand people’s perceptions of malaria and its implication for health-seeking behaviour and malaria control. Understanding community perception about malaria and the underlying intervention for its management has a policy implication for mounting successful prevention and control initiatives.

The results from this survey suggest that most respondents showed some form of malaria awareness. Household heads perceived malaria as the most widespread and serious health problem in the communities; meaning a high health burden to the household emphasising that malaria is prevalent all year round due to the presence of the Tono irrigation dam in the district. This awareness is higher than studies conducted in Swaziland [13] and Ethiopia [2]. This difference in awareness may be attributed to differences in information, education and communication.

Study participants attributed the cause of malaria to multiple factors. As shown in Table 2, some 65% of the study subjects indicated mosquito bites as the cause of malaria, which is comparable to findings reported elsewhere in Ghana [14]. There was a misconception in this study about the real cause of malaria by some of the respondents who associated malaria with alternative causes

such as genetic inheritance, eating of oily foods, eating of sugary foods, or heat from the sun. Such misconceptions or cultural explanations have also been reported from Ghana [14, 15] and other countries [16, 17]. General knowledge of causes of malaria in this study was relatively low (65%) when compared to the findings reported across sub-Saharan Africa [2, 18, 19]. However, some respondents (35%) in this study had not known the real cause of malaria. These respondents associated malaria with traditional and local beliefs. A study from Ghana has also reported such misconceptions [14].

The community’s sources of information for malaria varied with the main source being the skilled health workers from the NHRC (83.4%), which is similar to findings from Ethiopia [19].

Knowledge about malaria prevention was high amongst the respondents. They reported that malaria can be prevented to some extent by avoiding mosquito bites through the use of insecticide-treated bednets (ITNs), burning of coils and strong-scented leaves. The majority (92.5%) believe that regular usage of ITNs can prevent mosquito bites and malaria. Adongo and colleagues reported similar findings in Northern Ghana where 92% of the respondents believed that bednets could prevent malaria [20]. The knowledge on prevention by this population could be attributed to their continued exposure to health education by health workers of the NHRC in their communities. It is therefore not surprising that the population has a good knowledge of malaria prevention. Studies across Africa evidently suggest that ITNs are regarded as one of the most effective preventive methods [21, 22]. According to Binka and colleagues, use of ITNs can substantially reduce the risk of morbidity and mortality due to malaria [23].

Our results showed that respondents use multiple sources of health care for malaria treatment. Hospital/clinic, local pharmacies, herbs and traditional healers were the main providers of malaria treatment. Interestingly, more than half (54.2%) of the respondents preferred to seek treatment from a health facility for the reason of it being the most effective although this was considered more costly and less convenient than traditional healers, usage of herbs and buying of drugs for self-medication from local pharmacies; these findings are consistent with other studies [13, 19]. Malaria treatment was often report-

ed to be a combination of both traditional and modern methods. Treatment takes the form of self-medication at home with anti-malarial, herbal medicines and other modalities.

Despite the fact that traditional forms of treatment for malaria are widely used, most respondents mentioned that the first course of action when a child suffered from malaria was to consult a health facility. They have learnt from experience that the other forms of treatment are not most efficient. Evidence has shown that people switch from one health care source to another as time passes and as their condition persists [1]. The combination of both traditional and modern methods has been common practice in Africa [15, 24] and Beiersmann and colleagues therefore assert that treatment behaviour should be viewed as a process in which beliefs and actions are continuously debated and evaluated throughout the course of the illness [25].

The findings clearly demonstrate that the majority of the respondents had adequate knowledge and desirable health seeking-behaviour; still a sizable proportion had misconception of the cause of malaria. The correction of such misconceptions about the relationship between mosquito bite and malaria through health education messages is critical for the success of malaria prevention and control. Therefore there is the need to improve the behavioural patterns and attitudes regarding malaria management and control by dissemination of appropriate information on malaria through active education campaigns using media advertisements, community durbars and workshops among health-workers, which should be based on a sound understanding of the socio-cultural norms of the community.

## 5 Conclusions

We show that local perception and health-seeking behaviour are critical to the success and sustainability of malaria management and control. Making educational messages culturally sensitive is paramount to capitalise on the positive beliefs and behaviours that already exist in local communities. Understanding local concepts of illness and their influence on health care-seeking can complement existing knowledge and lead to the development of more effective malaria control interventions.

## 6 Acknowledgements

We are extremely grateful to the participants in the study for sharing their knowledge on malaria, its prevention and healthcare-seeking approaches.

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