

# Knowledge And Practice On Malaria Prevention In A Ghanaian Community

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## Abstract

**Introduction:** Malaria remains a major cause for global morbidity and mortality with most cases occurring in sub-Saharan Africa including Ghana. Presently, Ghana as part of her fight against malaria has implemented interventions to aid control of the deadly disease. It is therefore important to assess awareness of these measures in different communities. The study therefore sought to determine knowledge and practice on malaria prevention among the people of Aseewa community in the Ledzokuku constituency, Ghana.

**Methods:** A descriptive cross-sectional study design was employed for this study with a semi-structured questionnaire to collect participants' demographic characteristics, information on their knowledge and practices towards malaria infection and prevention. The data obtained was analysed with Microsoft Office Excel 2019 and Statistical Package for Social Science (SPSS) version 27.0.

**Results:** A total of 150 respondents, (70%) respondents had high level of knowledge on malaria but only 41.3% of them have knowledge on its preventive measures. Main sources of information on malaria were the Media 137(91.3%) and the hospital 58(38.7%). Malaria prevention included draining stagnant water and distilling gutters (78.7%), clearing the environment of vegetation (71.3%), indoor residual spraying (72.7), and using insecticide treated net (55.3%).

**Conclusion:** Study respondents demonstrated adequate knowledge on malaria infection. However, knowledge on preventive measures was lacking. Therefore, interventions to curb an outbreak of Malaria in the community should be focused on increased education on the preventive measures of malaria.

**Key Words:** Ghana, infection, malaria prevention, Aseewa community, Ledzokuku constituency.

## Introduction

Malaria remains a major cause for global morbidity and mortality.<sup>1</sup> Although the increase in expenditure by the international health community has helped in significantly reducing the malaria incidence and mortality over the last 15 years, nearly half the world population still lives in malaria-endemic areas.<sup>2</sup> Majority of the current malaria cases occur

in sub-Saharan Africa (SSA) of which Ghana is a member.<sup>2</sup>

Infants, children under the age of five, pregnant mothers, and HIV/AIDS patients, as well as non-immune refugees, transient communities, and travelers, are all at a substantially higher risk of contracting malaria and developing serious disease. According to the Ghana Statistical Service, malaria

is worse in children under five years, pregnant women and the immune suppressed due to reduced immunity.<sup>3,4</sup> Presently, Ghana as part of her fight against malaria has implemented interventions to aid control of the deadly disease. Some of the interventions applied included residual insecticide application against adult mosquitoes, mass chemoprophylaxis with Pyrimethamine medicated salt, and improvement of drainage system in communities. Another important national intervention is the Roll Back Malaria Programme of Ghana Health Service.<sup>5</sup> The free distribution of Long Lasting Insecticide Treated Nets (LLITNs) has also impacted malaria prevention in pregnant women and children under five and the reduction in the cost of LLITN for other groups of people. The government has also subsidized the cost of artemisinin-based combination therapy (ACT) that is now used as first line treatment for uncomplicated malaria. Finally, there is training of local health assistants who are equipped to manage complicated cases that cannot be handled at the home.<sup>5</sup> There are several barriers to effective malaria prevention and treatment, especially for children under five years which results in malaria preventable deaths of over four hundred thousand individuals yearly, of whom 70% are under-five.<sup>2</sup> We systematically identified barriers to effective malaria treatment and prevention that are consequences of logistical impediments, skepticism of conventional treatments, preference for traditional modalities, and incomplete understanding of malaria causation and transmission.<sup>6</sup>

Reduction of these barriers to the barest minimum would make global malaria elimination attainable. The understanding of the possible causes, modes of transmission, and decision to adopt preventive and control measures, vary from community to community and among individual households. There have been a considerable number of reports about knowledge, attitudes, and practices relating to malaria and its control from different parts of Africa which indicated that misconception about malaria still exist.<sup>7</sup> Thus, local knowledge and practices related to prevention of malaria are important for the implementation of culturally

appropriate, sustainable, and effective intervention.<sup>8</sup> For effective development of malaria control strategies, there must be adequate understanding of societal risk factors, knowledge, and perceptions about malaria.<sup>9</sup> Though several studies have shown that education can increase household adherence to and use of malaria control interventions the contribution of social factors and knowledge, attitude, practice (KAP) studies have not been fully exploited at the local or community levels.<sup>10</sup> This study will further increase the availability of data necessary for appropriate local control and preventive measures and to support and guide the malaria preventive policies regionally.

## Methods

A community-based survey was conducted at Asesewa Community of the Ledzokuku Municipality, in Accra, Ghana. The Ledzokuku Municipality is divided into two sub municipalities: Teshie North and Teshie with 12 electoral areas. The municipality has 23 health facilities; fourteen public health facilities and nine private facilities. The municipality has a land area of about 35.6 km<sup>2</sup> with a density of 4,455/km<sup>2</sup>. It shares boundaries with Krowor Municipal Assembly to the East, La Dade-Kotopon Municipal Assembly to the West, Adentan and Ayawaso West Municipal Assemblies to the North and the Gulf of Guinea to the South. Simple random sampling technique was used to sample respondents for this study. Three hundred paper cuts were made and out of this number, two hundred and fifty of the cuts had 'yes' inscribed on them. The paper cut was put into an opaque bag. Vantage points in the community such as churches, community market places, lorry parks and areas where it is likely to find large group of individuals was visited during the data collection process. The idea of sampling from such areas in the community is for the reason that more of the community members converge from their various homes across the length and breadth of the community to the mentioned areas at a particular point in time. Sampling from these areas was to ensure representativeness of the entire community. Upon meeting an individual within the inclusion

criteria and consent given to take part in the study, balloting was done. With a draw of 'yes' the individual was sampled while those who do not draw 'yes' were not sampled for the data collection. Sampling was not repeated for a respondent already sampled. Data was collected with a structured questionnaire. Data collected was entered in Excel 365 and cleaned. The cleaned data was exported into SPSS Version 25. Data was analyzed with descriptive statistics. Results were presented in tables and narrations. The study protocol was approved by the Community Health Dissertation Review Committee of Family Health University College and an introductory letter obtained from the committee for submission to Asesewa Traditional leadership for permission to conduct the study. Every prospective respondent was also given a brief on the purpose of the study.

## Results

All participants 150/150(100%) were aware of malaria the respondents were aware of malaria, majority 149(99.3%) knew malaria was transmissible by mosquito bite with 149(99.3%) knowing everyone is vulnerable to malaria infection. Multiple sources of information on malaria is depicted in table 1.

The time for most frequent mosquito bite was thought by most respondents 90(60%) as anytime of the day and 60(40%) perceived most frequent mosquito bites were in the morning.

Common symptoms of malaria were stated by 142(94.7%) as high fever and chills, 110(73.3%) recorded both vomiting and loss of appetite. Headache and body pains were stated as a symptom 90(60%), and 68(45.3%) respectively (Figure1). Other symptoms mentioned were stomach aches, weakness, loss of breath, dizziness and bitter taste in mouth. Treatment options for malaria were hospital treatment 69(46%), 50(33.3%) mentioned treatment from chemical or drug store, 28(18.7%) used herbal medicine and 3(2%) used self-treatment at home against malaria. Malaria treatment was sought immediately or within 24hours after feeling symptoms of malaria among 140(93.3%)

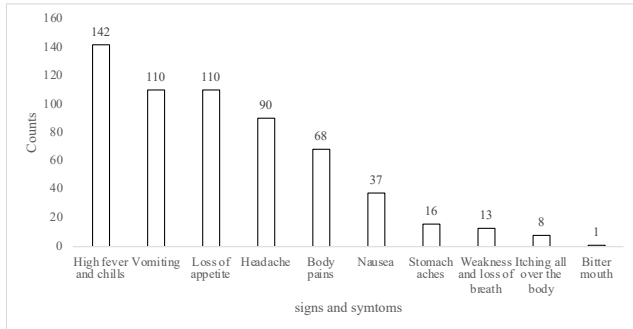
of respondents while 10(6.7%) reported seeking treatment after 24 hours. The responses revealed that 147(98%) of respondents agreed that malaria could be fatal, however almost all respondents 149(99.3%) agreed that malaria is a preventable infectious disease with only 1(0.7%) disagreeing.

**Table 1 Participants knowledge on malaria**

| Variable                             | Attributes                                    | (N=150) | (%)  |
|--------------------------------------|-----------------------------------------------|---------|------|
| Awareness of malaria                 | Yes                                           | 150     | 100  |
|                                      | No                                            | 0       | 0    |
| Source of information                | Media                                         | 137     | 91.3 |
|                                      | Hospital                                      | 58      | 38.7 |
|                                      | Friends/Family                                | 30      | 20   |
|                                      | School                                        | 16      | 10.7 |
|                                      | Workplace                                     | 10      | 6.7  |
| Most vulnerable to malaria infection | Children only                                 | 1       | 0.7  |
|                                      | Everyone                                      | 149     | 99.3 |
| Malaria transmission                 | By drinking contaminated water.               | 8       | 5.3  |
|                                      | By eating contaminated food                   | 1       | 0.7  |
|                                      | Mosquito bite                                 | 149     | 99.3 |
| Frequent time of mosquito bit        | Anytime of the day                            | 90      | 60   |
|                                      | During night hours                            | 60      | 40   |
| Treatment options                    | Hospital treatment                            | 69      | 46   |
|                                      | Self- treatment at home                       | 3       | 2    |
|                                      | Treatment from chemical or drug store         | 50      | 33.3 |
|                                      | Using herbal medicine                         | 28      | 18.7 |
| Time of seeking Malaria treatment    | After 24 hours                                | 10      | 6.7  |
|                                      | Immediately after feeling symptoms of Malaria | 117     | 78   |
|                                      | Within 24 hours                               | 23      | 15.3 |
| Malaria causing death                | Yes                                           | 147     | 98   |
|                                      | No                                            | 3       | 2    |

Abbreviations: N, Frequency; %, Percentage

Less than half of the respondents (41.3%) had high knowledge about prophylaxis and preventive measure of Malaria. Prophylaxis and preventive measures are agreed upon in a descending order in table 2.



### Distribution of signs and symptoms

**Table 2 Malaria preventive measures**

| Measure                                       | Yes<br>n(%) | No<br>n(%) | Total<br>n(%) |
|-----------------------------------------------|-------------|------------|---------------|
| Draining stagnant water and desilting gutters | 118(78.7)   | 32(21.3)   | 150(100)      |
| Indoor residual spraying                      | 109(72.7)   | 41(27.3)   | 150(100)      |
| Clearing the environment from vegetation      | 107(71.3)   | 43(28.7)   | 150(100)      |
| Using Insecticide Treated Nets                | 83(55.3)    | 67(44.7)   | 150(100)      |
| Observing personal hygiene                    | 52(34.7)    | 98(65.3)   | 150(100)      |
| Sleeping under a mosquito net                 | 51(34.0)    | 99(66.0)   | 150(100)      |
| Visiting the hospital for check-up regularly  | 27(18.0)    | 123(82.0)  | 150(100)      |
| Exercising well                               | 14(9.3)     | 136(90.7)  | 150(100)      |
| Eating well                                   | 14(9.3)     | 136(90.7)  | 150(100)      |
| Taking malaria prophylaxis                    | 12(8.0)     | 138(92.0)  | 150(100)      |
| Fasting and prayers                           | 2(1.3)      | 148(98.7)  | 150(100)      |

Abbreviations: n, frequency; %, Percentage

## DISCUSSION

The key to reducing the transmission and impact of malaria is having adequate knowledge about the disease itself. This knowledge should cover among other things: the vulnerable groups, signs and

symptoms, transmission, vector habits, timeliness of management and complications. The study showed 100% prevalence of awareness of Malaria, 70% high knowledge about the disease and 41% knowledge of preventive measures. Their source of information was mainly the media, 91.3% and 38.7% from the health facility. A previous study by Konlan et al., mentioned adequate knowledge of malaria exhibited by participants with similar source of information.<sup>11</sup> Other studies also expressed high level of awareness.<sup>12,13</sup> Malaria is in fact mentioned in all places due to its debilitating impact on all individuals especially on pregnant women and children under five years. Vulnerability of all to malaria was mentioned among almost all of the participants of this study as 99.3% acknowledged this fact. Malaria if not treated promptly could even lead to death and should be treated with urgency. They also acknowledge the fatalities that can arise from malaria if not given the needed timely attention.<sup>12,14</sup> The mode of transmission of malaria was known among almost all of the participants in this study, 99% as through the bites of mosquitoes. The study also reveals that mosquito bites could be experienced anytime of the day by majority (60%) of the study participants. The findings that bites from mosquitos occur at anything is consistent with that of previous studies that mosquito bites at any time lead to the malaria infection.<sup>15,16</sup>

Knowledge of malaria symptoms is significant to treatment and response. The knowledge of symptoms elicited from multiple responses mostly mentioned fever and chills (94.7%) and this is similar to the report by Kimbi et al.<sup>7</sup> According to Kimbi et al., 88% of the participants in their study had adequate knowledge on malaria and its prevention. Fever and chill are classic symptoms of malaria as the infection is able to offset the temperature control of the brain. Also, a significant number of participants mentioned vomiting and loss of appetite, headache and body pains as symptoms more typical of malaria, and some participants mentioned stomach aches, loss of breath, dizziness and a bitter taste in the mouth which certainly led to loss of appetite and weakness. With regards to the symptoms noted, it is certain that malaria is a



disease condition that was well known among the participants as probably they have had a personal experience of the condition themselves.

According to findings of this study, the health facility and chemical stores were mentioned as treatment options among 46% and 33.3% of participants respectively as they were mostly known and available to them. Also herbal treatment and home remedies were also used. A cross sectional study by Ojeikere et al mentioned high level of awareness and knowledge of malaria has led to people seeking the right treatment option though not all people do that.<sup>17</sup> In this study, majority of the participants sought treatment at the health facility. The choice of treatment possibly has been tested and tried and those individuals have stuck to it during crisis. Also, with regards to treatment options, other factors could play a role in the choice. These could be finances, availability and accessibility of health facilities which could also affect the time taken to seek malaria treatment when symptoms mentioned above are felt. Majority of the participants (78.0%) in this study, sought treatment immediately they felt malaria symptoms. On the contrary, some of the participants reported they never sought treatment from anywhere and certainly self-medicated at home. This also shows that the education on malaria is inadequate. Over 98% rightly mentioned malaria could kill if not treated. As malaria has been the disease condition known with the highest mortality especially in children in Africa.

Finally, the knowledge of malaria preventive practices was delved into taking into consideration the preventive practices in the general population and in pregnant women. Practices for prevention of malaria are pharmacologically or non-pharmacologically based. Drugs that are used to prevent malaria are mostly administered to pregnant women. These include Intermittent Preventive Treatment in pregnancy (IPTp). Practices for malaria prevention that did not involve drugs were mostly indoor residual spraying to kill mosquitoes as mentioned by 72.7% respondent and the use of insecticide treated nets by 55.3% of participants. Watiro and Awoke mentioned in their study that eliminating mosquitoes by spraying or using

insecticide mosquito bed nets was invaluable in the prevention of malaria. Environmental practices that were identified as potent means of preventing malaria were draining stagnant water (78.7%), clearing bushes (71.3%). Khairy, et al. also found that the use of indoor insecticide spray was the main form of malaria prevention as against sleeping under mosquito nets as the most frequently used method. It was also found that maintaining good hygiene was necessary in preventing malaria infection as indicated by 34.7%.<sup>12</sup>

Limitations of the study included targeting one specific community and the results may be specific to that community and not generalizable to populations in other areas or communities of Ghana. Secondly, the study captured self-reported information and relied primarily on respondents providing the right information. Therefore, misreporting by respondents cannot be ruled out. However, the results agree with work done in other communities making it important to know what is lacking in specific communities so that intervention could be community targeted.

## Conclusion

The people of Asesewa community had adequate knowledge about malaria infection which was similar to studies done in other communities. However, we found inadequate knowledge on preventive measure. Thus, calling for more education on the preventive measures in this community. Future work is recommended for a systematic review on studies to compare response to intervention in specific communities and where additional works need to be done to eradicate malaria.

## Conflict of Interest

Authors declare that they have no competing interest.

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