

## THE ROLE OF HERBALISTS IN THE MANAGEMENT OF SEVERE AND UNCOMPLICATED MALARIA AMONG CHILDREN IN THE SHAMA AHANTA EAST AND AHANTA WEST DISTRICTS OF GHANA

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### ABSTRACT

*The role of herbalists in the management of malaria in Ghana is yet to be recognized despite the proliferation of antimalarial herbal products produced by the herbalists, on the Ghanaian market. This study was carried out to ascertain the role of herbalists in the management of severe and uncomplicated malaria among children in the Shama-Ahanta East and Ahanta West Districts of the Western Region of Ghana. The study areas were divided into twelve clusters, questionnaires and focus group discussions were used to obtain the needed information on the people's knowledge about malaria, their perception of the herbal medicinal practice and the role herbalists play in the management of severe and uncomplicated malaria among children. All the herbalists involved in the study used plants with neem tree (*Azadiracta indica*) being the most commonly used (43%). The study indicated that 75.6% of mothers patronized recognized health-care services with only 7.3% patronizing both the services of the herbalists and recognized healthcare providers whilst 17.1% of the mothers relied solely on the services of herbalists. All the herbalists managed convulsion but only 65% collaborated with health centres in the management of malaria. The study has unveiled the significant role of herbalists in the management of malaria in the two districts.*

### INTRODUCTION

Malaria is a devastating disease and a threat to public health (WHO, 1992) resulting in 300 – 500 million cases and 1.5 – 2.7 million deaths annually (WHO, 1999). About 90% of these annual cases and deaths occur in Sub-Saharan Africa (Asante and Assenso-Okyere, 2003). In Africa, 90% of these deaths occur in young children (Asante and Assenso-Okyere, 2003). Malaria contributes 20-40% of outpatient visits and 10-15% of hospital admissions in Africa (WHO, 1999)

In Ghana, there are 1.5-3 million cases of malaria each year, representing 40% of outpatients' cases (Asante and Assenso-Okyere, 2003). The disease contributes 13.2% of all mortality cases in Ghana, 9.4% of all mortalities in pregnant women and 22% of all mortalities in children under 5 years (Asante and Assenso-Okyere, 2003), making it the leading cause of mortality in children under 5 years (UNDP, 2002).

In Northern Ghana, Akazili (2002) estimated

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the cost of malaria care to be only 1% of the income of the rich households but 34% of the income of poor households. In a nationwide study by Asante and Assenso-Okyere (2003), total cost per episode of malaria was estimated at US\$ 15.79 per household. This amount is significant due, in particular, to the possibility of multiple episodes of malaria on a household (Asante and Assenso-Okyere, 2003).

Clinical episodes of malaria are manifested when *Plasmodium species* infecting humans undergo multiple proliferation in the liver and subsequently in the erythrocytes (Daubersies *et al.*, 1996; Karunaweera *et al.*, 2003), rupture to release merozoites, pyrogens and toxin (Karunaweera *et al.*, 2003).

In spite of the well-defined biomedical features of malaria, evidence of superstition still exists as the cause of cerebral malaria, characterized by convulsion in rural communities of some African countries (Makemba *et al.*, 1996; Ahorlu *et al.*, 1997; Hausmann-Muela, *et al.*, 1998; Makundi *et al.*, 2006).

In Ghana, like any other African country, treatment-seeking behaviour of patients for malaria and many other diseases is influenced by factors such as beliefs, availability, proximity and accessibility of health facilities (Hassouna, 1983; Igun 1987; Ahorlu *et al.*, 1997).

Although herbal medicine use is common in Ghana, the role of herbalists in the management of malaria is yet to be ascertained and recognized. Herbalists are perceived by recognized health professionals as obstacles to quality healthcare delivery in general and the fight against malaria in particular. It is, however, important to note that this position is being softened of late due, probably in part, to the modernization of herbal medicinal practice. It is against this background that, a community cross-sectional study was carried out in the Shama- Ahanta East and West Districts of the Western Region of Ghana to assess the knowledge level, perception of malaria, treatment-seeking behaviour and the role of herbalists in the management of malaria.

## **MATERIALS AND METHODS**

### **Study site**

Shama-Ahanta East and Ahanta West Districts are found in the Western Region of Ghana. They occupy a total land area of 979 square kilometres, with a population of 190,280 and are located about 242 kilometres to the West of Accra, the national capital. The districts have an equatorial type of climate with mainly woodland vegetation in the northern and central parts, while thicket is intermingled with tall grass species along the coast. Average temperature is about 22°C with annual rainfall value of 23.50 mm. Farming and fishing are the major occupations of the inhabitants.

### **Data collection**

Each of the districts was divided into three zones using geographical demarcations of the borders of the communities. Each zone was further divided into two sub-zones to give a total of six clusters per district. Herbalists were selected at random from each sub-zone through key informants including opinion leaders, schoolteachers and community elders. Mothers of children under five years old were selected randomly with the assistance of key informants and traditional birth attendants.

In-depth interviews and focus-group discussions (FGDs) were employed to investigate and describe how malaria was managed in the study communities and the role of herbalists in the management of malaria. Two FGDs were conducted, one with herbalists and the other with mothers. The FGDs were aimed at getting information on community perception of malaria in general and the childhood form in particular, treatment seeking behaviour and the role of herbalists in the management of malaria. FGD participants were selected at random in collaboration with key informants, based on experience, knowledge of the subject under investigation and willingness to participate in the discussions (Morgan, 1988). Each discussion lasted for the recommended duration of one and a half hours (Coreil, 1995; Babbie, 1998). Knowledge level of participants were assessed using the following signs and symptoms of malaria: ane-

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mia, fever, cough, crackles, cyanosis, shock, coma, impaired consciousness, fits, neck stiffness, headache, backache, muscle aches, chest in-drawing, grunting, nasal flaring, tooth grinding, gaze abnormalities and lethargy. Knowledge level was classified as poor, good and excellent if respondents could identify three, five and more than six respective signs and symptoms of malaria.

In addition, educational levels of respondents were quantified by assigning the figures 0, 2, 4, 6 and 8 respectively to no formal education, primary, junior high/middle school, senior high and tertiary education.

#### **Data analysis**

Qualitative data were analyzed by content analysis. The statistical software package, SPSS version 16 was used to analyze the quantitative data. The means and standard deviations (SD) were determined and reported as mean  $\pm$  SD. Mean values were compared using the independent sample t-test. In addition, Pearson correlation coefficient was used to assess linear association among quantitative parameters. All analyses were performed at the 5% significance level.

#### **Ethical Considerations**

Informed consent was sought from all study participants after a standard explanation of the study objectives had been given and the benefit to be derived from participating in the study had been made known in the local language. The study posed minimal risk to participants and confidentiality was assured. All protocols followed were in line with the ethics requirements of the Ghana Ministry of Health.

### **RESULTS**

#### **Socio-Demographic Characteristics**

Males (62.5%) constituted majority of herbalists. Whereas 63.4% of mothers fell within the age group of 30-49 years, the modal age group of the herbalists was 40-49 years (Figure 1). As a result, the mean age of herbalist (53.33 years) was significantly ( $P < 0.001$ ) higher than that of caretakers (37.07 years; Table 1). In terms of

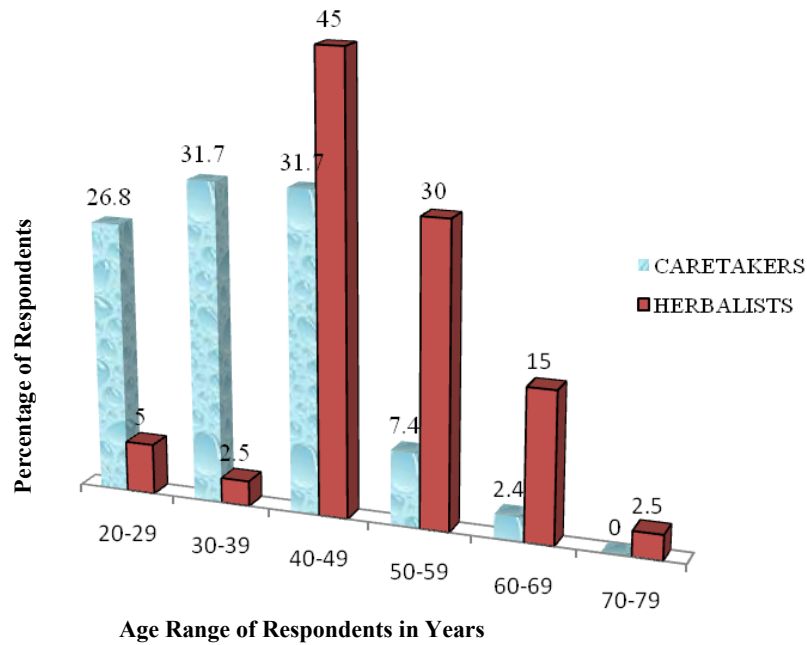
level of education, most herbalists (60%) and mothers (46.3%) had up to junior high school or middle school level of education (Figure 2). None of the herbalists was educated beyond the senior high school level though 4.9% of mothers had post-secondary education (Figure 2). However, the mean educational level of herbalists (3.80) and caretakers (4.10) did not differ significantly ( $P = 0.47$ ; Table 1).

#### **Community Knowledge about Malaria**

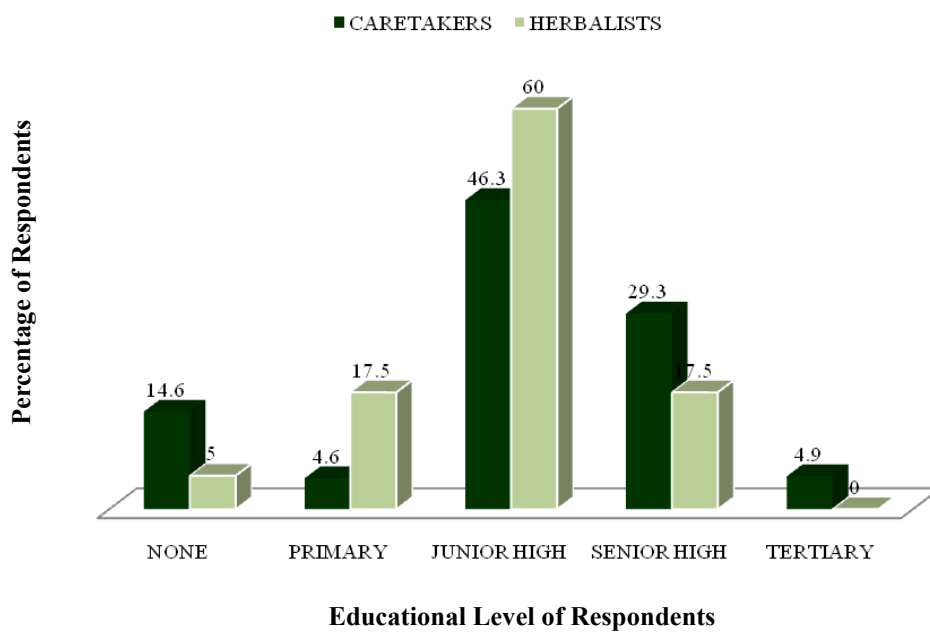
The study population had good knowledge of the illness (Table 1). Though 92.6% of the respondents indicated that malaria is caused by mosquitoes, some herbalists (12.5%) were able to state emphatically that the disease is caused by a protozoan called *Plasmodium*, which is carried and spread by mosquitoes. Majority of the mothers (92.7%) and the herbalists (97.5%) could distinguish between severe malaria and uncomplicated malaria by their signs and symptoms. Similarly, 93.8% of the entire respondents were able to associate convulsion in children with severe malaria and not evil spirits as observed in Tanzania (Makundi *et al.*, 2006). Although, the mean knowledge level of herbalists (5.51; Table 1) was slightly higher than that of caretakers (5.32; Table 1), the difference in knowledge between the two groups did not reach statistical significance ( $P = 0.58$ ; Table 1). Interestingly, a significantly negative correlation was observed between educational level and age of respondents in the entire sample ( $r = -0.759$ ;  $P < 0.001$ ), caretakers ( $r = -0.899$ ;  $P < 0.001$ ) and herbalists ( $r = -0.819$ ;  $P < 0.001$ ) as indicated in Table 2. A similar trend of correlation was observed between knowledge of malaria and educational levels of respondents in the entire sample ( $r = -0.292$ ;  $P = 0.008$ ) and caretakers ( $r = -0.392$ ;  $P = 0.011$ ) but not the herbalists ( $r = -0.133$ ;  $P = 0.413$ ). In addition, no significant ( $P > 0.05$ ) correlation was found between age and knowledge level of malaria in the herbalists (Table 2).

#### **Mode of Acquisition of the Herbal Medicinal Practice**

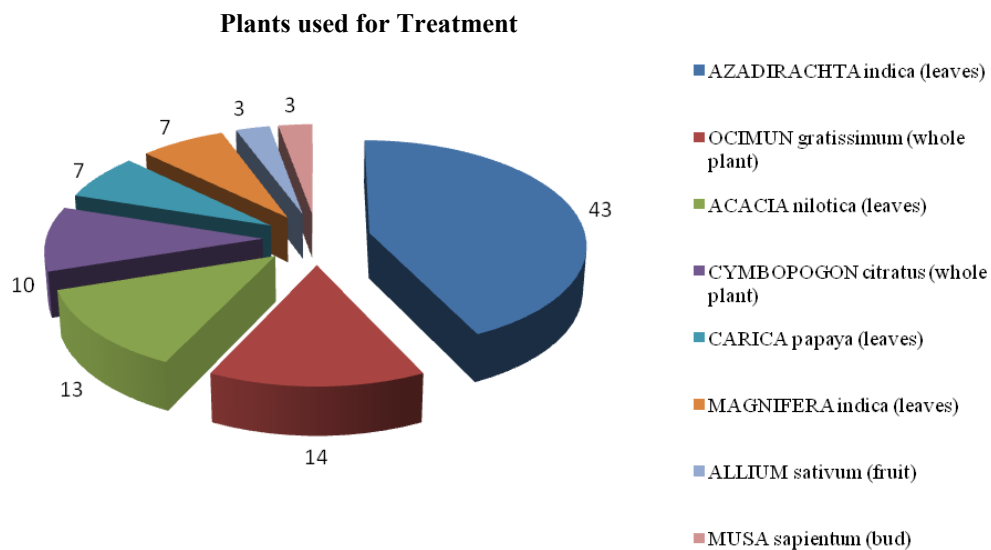
We investigated how the herbal medicinal practice was acquired, since respondents had widely



**Fig. 1:** A bar chart of percentage distribution respondents in the various age ranges in years



**Fig. 2:** A bar chart of percentage proportion of respondents' educational levels



**Fig. 3:** A pie chart showing proportion of various plants (parts of plants) used for treatment of malaria in percentage

**Table 1: Socio-demographic characteristics and knowledge level of respondents**

<b>AGE</b>	<b>Mean ± standard deviation</b>	<b>Sample size</b>	<b>p-value</b>
Entire sample	44.11 ± 12.92	81	
Caretakers	37.07 ± 11.29	41	<0.001*
Herbalists	51.33 ± 10.29	40	
<b>EDUCATIONAL LEVEL</b>	<b>Mean ± standard deviation</b>	<b>Sample size</b>	<b>p-value</b>
Entire sample	3.95 ± 1.84	81	
Caretakers	4.10 ± 2.12	41	0.47
Herbalists	3.8 ± 1.48	40	
<b>KNOWLEDGE</b>	<b>Mean ± standard deviation</b>	<b>Sample size</b>	<b>p-value</b>
Entire sample	5.38 ± 1.85	81	
Caretakers	5.32 ± 1.94	41	0.58
Herbalists	5.51 ± 1.81	40	

\* means significant P-value i.e.  $P < 0.05$

**Table 2: Pearson's correlational tests among age, knowledge and educational level of respondents**

<b>Correlation between age and knowledge on signs and symptoms of malaria</b>	<b>Sample size</b>	<b>Coefficient, r</b>	<b>p-value</b>
Entire respondents	81	0.165	0.141
Caretakers	41	0.257	0.105
Herbalists	40	0.056	0.733
<b>Correlation between age and educational level</b>	<b>Sample size</b>	<b>Coefficient, r</b>	<b>p-value</b>
Entire respondents	81	-0.759	<0.001*
Caretakers	41	-0.899	<0.001*
Herbalists	40	-0.819	<0.001*
<b>Correlation between knowledge of malaria and educational level</b>	<b>Sample size</b>	<b>Coefficient, r</b>	<b>p-value</b>
Entire respondents	81	-.292	.008*
Caretakers	41	-.392	.011*
Herbalists	40	-.133	.413

\* means significant P-value i.e.  $P < 0.05$

varied backgrounds. Majority of the herbalists (65%) indicated that they inherited the practice from families. The remaining 35% acquired the practice through apprenticeship under the guidance of an experienced herbalist. The exact time when the apprentices became independent to take up the practice was determined by the experienced herbalist. It took 4-10 years to acquire the practice.

### **Treatment Seeking**

Majority of the caretakers (75.6%) patronized the recognized healthcare services only, with 17.1% relying solely on the services of herbalists. About 7.3% of caretakers patronized recognized healthcare services and that of herbalists. In one of the FGDs, a 50-year old mother from Biaho in the Ahanta West District explained why she patronized the services of herbalists, as follows:

*“Herbalists give patients one hundred percent attention no matter the patient's condition, and apart from their knowledge in herbal medicine, they are also parents and therefore treat patients as their own children.”*

Another mother, 38 years old from Otopo in the same district justified her patronage of services of herbalists this way:

*“Herbs are more effective in fighting malaria in my system, same applies to all my children. Herbal medicines are also less expensive compared with western medicine. Furthermore, herbalists give patients attention first and make sure they are well before considering bills or money.”*

In addition, the nearness of the hospital or health centre played an important part in the decision to send the sick to hospital or herbalist as explained by a 41-year old mother from Apowa in the Ahanta West District. She puts it thus:

*“The nearest hospital to this village is about 10 Kilometres away so whenever my child convulsed, I took him/her to a herbalist who lives just near the football field. This is because I am afraid in an attempt to take the child to hospital, he/she may die on the way.”*

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The above observations indicate that, in the study area, seeking treatment for children suffering from malaria is highly influenced by the mother's beliefs concerning the potency of herbs, the perceived attitude of the caregiver towards the patients, financial considerations and the distance of the treatment facility from the patient's residence.

## MANAGEMENT OF MALARIA

### Management by Herbalists

Herbalists identified at least three ways of managing uncomplicated malaria in children, which were not different from how caretakers managed the illness at home, indicating possible compliance of caretakers to the prescribed treatment regimen of herbalists. These included giving herbal medicine orally using enema syringe, washing with cold water to reduce the child's body temperature and giving herbal medicine orally.

Generally, it took 1-3 weeks for malaria patients to recover completely upon treatment with the herbs. Majority (92.5%) of the herbalists indicated that herbal medicine had no side effect on the patients whilst 7.5% mentioned some mild side effects like diarrhoea and nausea.

All the herbalists involved in the study managed severe malaria in children by providing first aid to the convulsed child. The first aids took different forms; opening of the child's mouth for efficient breathing (30%), washing the child with cold water to decrease the body temperature (52%) and giving the child herbal filtrate through the nostrils to revive the child (18%).

It was realized in one of the FGDs that, apart from the established signs and symptoms for malaria diagnosis, some herbalists (20%) employed modern equipment and laboratory analysis to aid in diagnosis.

A 40-year old herbalist from Anaji in the Shama Ahanta East district puts it this way:

*"I seek further laboratory analysis to*

*confirm diagnosis so that I become confident that I administer the right drugs for the right disease."*

On the use of modern equipment, a 42-year old woman, who works with a herbal clinic at Anaji in the Shama-Ahanta East District, explained how a radionic machine functions in diagnosing disease as:

*"The patient holds two cones which are connected to the radionic machine. A pendulum on the machine detects the diseases in the body and their percentage"*.

Scan computers, radionic machines and chiropractic machines with disease figure chart and sphygmomanometer for measuring blood pressure were some of the modern equipment used by the herbalists.

The use of modern equipment by the herbalists could be a sign of their readiness for possible collaboration with recognized modern health practitioners. On the other hand, it could be an attempt to make their services attractive to those who would normally not patronize herbal healthcare services.

### Plants Used in the Home Management of Malaria

The most common local herbs and plants mentioned by the herbalists in malaria treatment were: fever grass (*Cymbopogon citratus*), neem tree (*Azadirachta indica*) leaves, *Ocimum gratissimum*, *Acacia nilotica* and garlic (*Allium sativum*) as indicated in Figure 3. These herbs were ground and, at times, boiled and administered. Some were given to the mother of the child to be administered at home for few days.

### Collaboration with Health Centres and Personnel

Findings from the herbalists indicated that there existed some forms of collaboration between them and biomedical health centres, hospitals, clinics or personnel of these centres in managing malaria. Thirty-five percent of herbalists involved in the study indicated that, they did

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not have any collaboration with biomedical health personnel whilst the remaining 65% did have some collaboration. The collaboration took different forms including holding of joint workshops, seminars or fora (22.5%), referring of patients to hospital (17.5%), seeking further laboratory analyses to confirm diagnosis (15%) and interacting with biomedical health personnel (5%).

A few of the traditional healers (5%) did not indicate the form of collaboration.

### **Health Education**

All the forty herbalists said they educated their patients before or after treatment on measures to take in order not to be infected with malaria the next time. They often educated patients and the people of the community on how to avoid coming into contact with the vector (female *Anopheles* mosquito) by spraying their rooms with insecticide and sleeping under insecticide treated mosquito nets. They also advised patients to clean their surroundings and drain stagnant water in order to help decrease mosquito population in their communities. This advice, if practiced, will help reduce the incidence of malaria in the communities.

### **DISCUSSION**

The observed modal age of 30-49 years for caretakers was lower than that of herbalist (40-49 years). In general, the herbalists were older than the caretakers. This could probably be attributed to the unattractive nature of the work of herbalists, in particular, considering the mode of training and acquisition of the herbal practice. Age correlated negatively with level of education, signifying that, the younger ones were more formally educated than the older ones. This trend which has been noted in our earlier work at Bakaano, a suburb of Cape Coast (Boampong *et al.*, 2009), did not translate into knowledge level of malaria. Indeed, no significant correlation was observed between the age of respondents and their knowledge level on signs and symptoms of malaria. However, the community had a good knowledge about malaria. Majority of the mothers

(92.7%) and the herbalists (97.5%) were able to distinguish between severe malaria and uncomplicated malaria by their signs and symptoms, which are consistent with the biomedical definitions of the two forms of the disease. Similar observations were made in a study in Tanzania to determine the role of traditional healers in the management of childhood malaria (Makundi *et al.*, 2006). Although severe malaria, characterized by convulsion was ascribed to spiritual causes in that study and others in the Gambia (Aikins *et al.*, 1993), northern Ghana (Hudelson & Adongo, 1995), Greater Accra region of Ghana (Ahorlu *et al.*, 1997), and Tanzania (Makemba *et al.*, 1996), our findings differed from this superstitious trend. In the current study, 93.8% of the respondents associated convulsion with severe malaria and not evil spirits. This may be due to the numerous educational campaigns about malaria in the media in recent times. Such campaigns take the form of radio or television discussions, public fora and public health lectures on malaria-related issues.

Interestingly, a negative correlation was observed between level of formal education and knowledge on signs and symptoms of malaria in the entire study sample and in the caretakers but not the herbalists group. This negative association between formal education and knowledge level on malaria is at variant with our previous finding at a suburb of Cape Coast (Boampong *et al.*, 2009) where formal education was positively associated with knowledge level on malaria. Nonetheless, this observation could be an indication that in the Shama-Ahanta East and West districts, women with relatively low level of formal education paid more attention to malaria-related educational campaign messages than their counterparts with relatively higher level of formal education. This trend was not observed for the herbalists who prescribed and administered anti-malaria treatment to the wards of the caretakers. On the other hand, the lack of association between formal education and knowledge level of malaria may partly explain the unique mode of acquisition of herbal medicine practice.



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Herbal medicine practice requires some form of training but this training was not standardized as observed elsewhere (Makundi *et al.*, 2006). Nonetheless, some mothers (17.1%) in the study relied solely on services of herbalists with a few patronizing both the services of herbalists and recognized modern healthcare providers. A similar observation has been made in the study in Tanzania (Makundi *et al.*, 2006).

For mothers who depend solely on the herbal medicinal services, the hospital was considered only after the herbal medicine had failed to give the expected remedy. Such mothers gave reasons bothering on finance, beliefs, lack of accessibility to hospitals/clinics and perceived disrespect of some biomedical professionals toward patients. This finding has implication for the fight against malaria. With the employment of modern equipment like scan computers and radionic machines by some herbalists, coupled with the huge respect they command in the study communities, people who are reluctant to patronize herbal medicine might even be attracted and this makes the need for proper recognition of herbalists in the management of malaria more relevant.

Although some form of collaboration exists between modern healthcare professionals and the herbalists, this could be deepened if the role of herbalists was recognized as complementary to the effort against malaria. This would pave the way for timely referral of patients to the hospitals by the herbalists, to forestall the situation where patients with complications beyond the competence of herbalists were not referred at all or referred only when conditions were already worsened.

#### **CONCLUSION**

The role of herbalists in the fight against malaria has been elucidated. The need to consider community perception in the design of health educational campaigns has been re-emphasized. This could centre on the perceptions, modernization of herbal medicine and collaboration between herbalists and modern healthcare professionals.

#### **RECOMMENDATIONS**

Research should be conducted on the herbs used by the herbalists in treating malaria to ascertain the efficacy and the associated side effects. The design of public health educational campaigns on malaria should be community-specific and take into consideration community perception and beliefs.

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