Ethno-therapeutic Management of Malaria and its Vectors among the Ikales of South-western Nigeria

¹Badaki, J.A.²Afolabi, O. and ¹Bello, R.S.

1.   Infectious Diseases Research Group Federal University Lokoja Kogi State.

2.   Department of Environmental Biology **Adekunle** Ajasin University AkungbaAkok Ondo-Nigeria.

Abstract

The study was aimed at documenting practices used in the presumptive diagnosis of malaria and control of mosquitoes vectors by the Ikales of southwestern Nigeria. Semi structured questionnaires were used to collect information from 90 households, ten in-depth interviews and three focused group discussions were held with traditional healers and with mothers of children less than 5 years old respectively. The respondents had good knowledge of the signs and symptoms of malaria and distinguished it from other febrile illnesses. They also had a well-developed process of presumptive diagnosis and treatment. Of all the fevers only Ako-Iba whose symptoms are synonymous to biomedical description of malaria was alluded to mosquitoes and perceived as serious. The fever is associated with high body temperature, chills, headache, dehydration, vomiting, weakness and tongue coating. "Hot body" depicting high body temperature was frequently (46.6%) mentioned as the commonest symptom of Ako-Iba (Malaria fever) though traditional healers seemed more knowledgeable in recognizing the signs and symptoms of malaria. Interactions with traditional healers and mothers of U5 children also revealed that convulsion described as "stretching of the body "is only observed in children. The high level of local knowledge on Malaria could be utilized to develop more effective Malaria control interventions in the study area.

Key words: Malaria, Ethno diagnosis, Mosquito, Ikale, Nigeria.

Introduction

Malaria constitute one of the health problems in the tropics with about 300millioncasesof reported clinical episodes of malaria annually (Karuna moorthiand Abdi 2010).1million of these cases result in deaths annually(John Hopkins Malaria Research Institute, 2014) and 90%ofthesecases reportedly occur in tropical Africa(WHO,2005). Three major problems have continued to plague the management and control of malaria in Africa. First, the continuous development of malaria resistance to most of the most widely available, affordable and safest first line treatments is the greatest challenge (Kilama 2005; *Sendagireet*. al., 2005). Secondly, the overall control of the mosquitoes which transmits malaria is also made difficult by their resistance to a wide range of insecticides (Snow, 1996). The third is the lack of access to indoor residual spraying (IRS) and long lasting insecticidal nets (LLINs) (*Diggieet al.,* 2014) and widespread production of fake anti malarial drugs. Drug counterfeiting was first reported in Nigeria as early as 1968 (WHO, 2006) and has continued to negatively affect appropriate management of malaria (FMOH 2005).

Nature remains an ever evolving source of active compounds of medicinal importance. The use of *Azadirachta indica*, for instance, in the treatment of malaria infection in most communities in Nigeria has been a therapeutic practice for centuries (Aderenmu,2002;*Idowu et al.,* 2010).A number of other natural products having anti malarial activities have been documented in Nigeria (Idowuet al., 2010;Oreagbaet al., 2011).

The Ikalesare one of the deeply traditional Yoruba ethnic groups in the Southwestern coast of Nigeria. They have impressive traditional procedures to diagnose,prevent,and treat malaria such that informal training centres on traditional ethno-medical practice abound in the Ikale society (Odugbemi, 2005).The trado-medical knowledge like in most African societies has been acquired through several generations of illness experience and management which have evolved into community wide acceptable ethno-diagnostic procedures. However, there is little information in the public domain on traditional anti malarial herbal remedies and vector control practices amongst the Ikales in Southwest Nigeria.

The main objective of the current study was to explore the traditional knowledge of the Ikales in Irele Local Government Area (LGA) about malaria symptoms; diagnosis, ethno-therapeutic and vector control practices. The documented information would preserve valuable indigenous knowledge on plants used for anti malaria and vector control purposes and also enrichment of the repository of ethno-medicine in the country.

Materials and Methods

Study Area

Ikale is one of the several dialects of the Yoruba's, though the name is also used to refer to the people who speak the language (Adeoye, 1975). The groups occupy fourteen towns in the southeastern part of Ondo State spread over in Irele and Okitipupa Local Government Areas (LGA). IreleLGA lies on coordinates 60 29' 0" N latitude and 40 52' 0" E longitude occupying over 963km2 in the tropical rain forest belt. According to the 2006 census it has an estimated population of 145,166. The LGA is made up of seven major towns; but the study was restricted to only three towns: Ode-Irele, Ami, Ajaba.

Malaria is endemic in the study area (FMOH, 2005) and occurs throughout the year with peaks during the rainy season; a season that lasts for seven months (April to November). The Ikales are predominantly Christians however, customary beliefs play major role in shaping their way of life.

Data collection

Data on the traditional diagnosis and management of malaria in the three Ikale communities was collected through household surveys using semi-structured questionnaires, in-depth interviews, and focus group discussions. The semi-structured questionnaires which was translated to Ikale, the principal language spoken in the study area. was divided into two sections; the first section collected information on causes of malaria, known signs and symptoms of malaria while the second section documented herbs used in treating malaria, preparation and application processes of the herbal medicines. All plants mentioned by the respondents were identified in the field and deposited at the herbarium in the Department of Plant Science and Biotechnology, Adekunle Ajasin University, Akungba Akoko, Ondo Nigeria.

Participants for the semi-structured questionnaires were selected randomly using a multi-stage random sampling method as follows: Ode-Irele, Ami, Ajaba communities were randomly selected as the primary sampling units from the seven major towns in Irele. Each town has an average of 20 houses per quarters, so, within each town, three quarters were randomly selected out of the existing quarters. Using community mectizan treatment registers ten (10) households were randomly selected from each quarter such that thirty (30) house holds were recruited for each town. The treatment registers had records of households in each quarter. This way, ninety households (90) were recruited for the entire study. The minimum desired sample size was fixed at 60 respondents by assuming that 80% of the community had good knowledge of malaria diagnosis and its treatment at 95% confidence interval and 5% relative error.

Ten in-depth interviews and three focused group discussions were held with traditional healers and with mothers of children less than 5 years old respectively. Participants of the group discussions were identified during household surveys and invited for a special discussion on family health on a date mutually agreed upon. The discussions complemented the data obtained from interviews and questionnaires.

Ethical Approval

Ethical approval was obtained from Adekunle Ajasin University, Akungba-Akoko ethical review Board. Oral informed consent was obtained from community representatives before the commencement of the study and respondents also received explanations on the purpose of the study before every interview. They were also free to withdraw from the study at any stage. At the end of the study, the findings were disseminated to community members in an interactive forum. All research tools were pre-tested and modified for cultural acceptability of terminologies.

Data Analysis

All answers on the survey questionnaire were numerically coded and entered in Excel spread sheets. Data was checked, cleaned to eliminate errors and summarized using SPPS Statistical software version 16.0. Qualitative approach assessed the domains of knowledge, causation, severity, perceived burden and pattern of treatment seeking response to illness. Interviews and Focus group discussions were transcribed and responses grouped into classes expressing similar themes.

Results

Ethno diagnostic Skills

The Ikales recognise various types of febrile illnesses and classify them according to perceived causes and symptoms. The symptoms of malaria are well recognized by respondents to such an extent that Malaria fever is easily distinguished from other types of fever (Table 1).

There are four types of fever, the most severe fever is Ako-Iba (malaria) but most people know when they have it because the tongue is covered by a whitish coating. Traditional healer, Ode Irele.

Ako-Iba is the most serious of all fevers because it changes the colour of the tongue and causes stretching of the body in children. If it is not well treated it can cause death.

Focus Group Discussion, Mothers of Under-five (U5) children, Ami Community.

Of all the fevers only Ako-Iba (Malaria fever) is caused by mosquitoes and perceived as serious (Table 1). Ako-Iba (Malaria fever) is associated with high body temperature, chills, headache, dehydration, vomiting, weakness and tongue coating (Figure 1). -"Hot body" depicting high body temperature was frequently mentioned as the commonest symptom of Ako-Iba(Malaria fever) by traditional healers (51.7%) and residents (46.6%) in the study area (Figure 1). interactions with traditional healers and mothers of U5 children also revealed that "stretching of the body" (convulsion) is only observed in children. Excerpts from mothers of U5 children and traditional healers portrayed similar assertions.

"Convulsion only occurs in children and it is not common." Focus Group Discussion, Mothers of U5 children, Ode-Irele Community

"Incantations are recited over a convulsing child and upon recovery the mother is often advised to take the child to the nearest health facility". Focus Group Discussion, Mothers of U5 children, Ajaba Community.

"Ï do not often have cases of convulsion. It is rare but when it happens I revive the child through incantations before referring to the Government health clinic". In-depth Interview, Traditional Healer, Ajaba Community.

The standard diagnostic practice of the traditional healers was history taking of symptoms followed by examination of tongue, eyes as well as assessment of body temperature and colour of urine (Figure 2). Patients who manifest coated tongue and at least three any other symptoms presented in Figure 1 get treated for Ako-Iba with a "cocktail" of herbs. The practice of combining three to five different plant parts and mixing them into powder or infusions was the most popular therapy for malaria. The type and number of plant species used varied from healer to healer and depended on the healer's perceived effectiveness of the combinations. Twenty different species of medicinal plants used for treatment of malaria in the study area were identified and documented (Table 2). Mosquito was widely (HHS: 82.7%, Traditional healers: 93.1%) believed as the cause of malaria in the study area (Figure 3) and various approaches were engaged by respondents to ward off mosquito. These included burning of plants perceived to have repellant properties (Figure 4). Citrus sinensis (60%) and *Azadirachta indica* (75%) plants were frequently used within households to repel mosquito. Indoor spraying of residences with commercial insecticides was not popular (8%) in Irele (Figure 4).

Discussion

One of the objectives of the current study was to document the practices engaged in the diagnosis and management of malaria and control of vector mosquitoes. The respondents interviewed had good knowledge of the signs and symptoms of malaria and distinguished it from other febrile illnesses on the basis of community-wide accepted malaria signs and symptoms.

The Ikalesy also seem to have a well-developed process of presumptive diagnosis and treatment of "ordinary fever" (uncomplicated malaria) and Äko Iba (severe malaria) and could also link malaria with mosquitoes. This relatively good understanding of the causes and signs of the disease may help in the implementation of intervention measures aimed at reducing malaria incidence and prevalence since the people's knowledge about the transmission and major symptoms of disease are harmonious with biomedical model.

The low usage of commercial insecticides in the study area could be linked to cost affordability and not just mosquito resistance to the products as have been alluded by some studies (Snow, 1996).

Within a context of growing anti malarial resistance and the difficulties for households to afford and access effective anti malarial, promotion of phyto medicines may be a sustainable solution to malaria treatment (*Titanji et al.,* 2008). This focus is justifiable because herbal medicines are widely believed to be safe and also efficacious, especially that many drugs used in allopathic medicine have been derived from higher plants using leads from traditional knowledge (Farnsworth, 1990, Fabricant and Farnsworth, 2001, Van Wyk and Wink, 2004).

The four most commonly mentioned species were Vernoniaamygdalina, Momordica balsa mina, Azadirachta indica and Astonia boonei. Incidentally, these plant species have been reported in other studies to possess efficacious anti malarial properties (*Waako et al., 2005; Tonaet al., 2004; Asaseet al., 2005; Gessler, et al. 1995*). However, it is important to validate the claimed therapeutic efficacy of the "cocktail" of herbs as practiced by traditional healers in the study area. The doses and mode of administration would also require investigations for standardization. These validations may be done through simple observations of the response of people taking the herbal medicines. Commonly a history of prolonged safe and apparently successful traditional use of herbal medicines provides the initial critical information for wider acceptance (Orwa, 2002, Van Wyk and Wink, 2004). Such validation may help to not only identify safe and efficacious anti malarial candidates, but may also increase confidence in the use of herbal medicines in Nigeria.

Conclusion

The well-developed process of presumptive diagnosis and treatment of "ordinary fever" as documented in the study and the relatively good understanding of the causes and signs of the disease could help in the development of information, education and communication (IEC) materials and in the implementation of intervention measures aimed at reducing malaria incidence. The study has also shown that the people's practice the use of herbal cocktails for prevention and treatment of malaria; the selection of herbs for making the cocktails being dependent on perceived efficacy of the traditional healer.

Acknowledgement

Terminology	Symptoms	Classification	Causal factor
Otutu	High body temperature Chills	Ordinary fever	Change in weather
Oreeree	-Intermittent high body temperature - Headache	Ordinary fever	-Overwork -Exposure to sunlight for long periods
Ibajo	-High body temperature -Dehydration -Body weakness	Ordinary fever	Early rains
Ako-Iba	-High body temperature -Headache -Chills -Dehydration -Vomiting -Weakness -Tongue coating -convulsion	Severe Malaria	-Mosquitoes -Bushy Environment

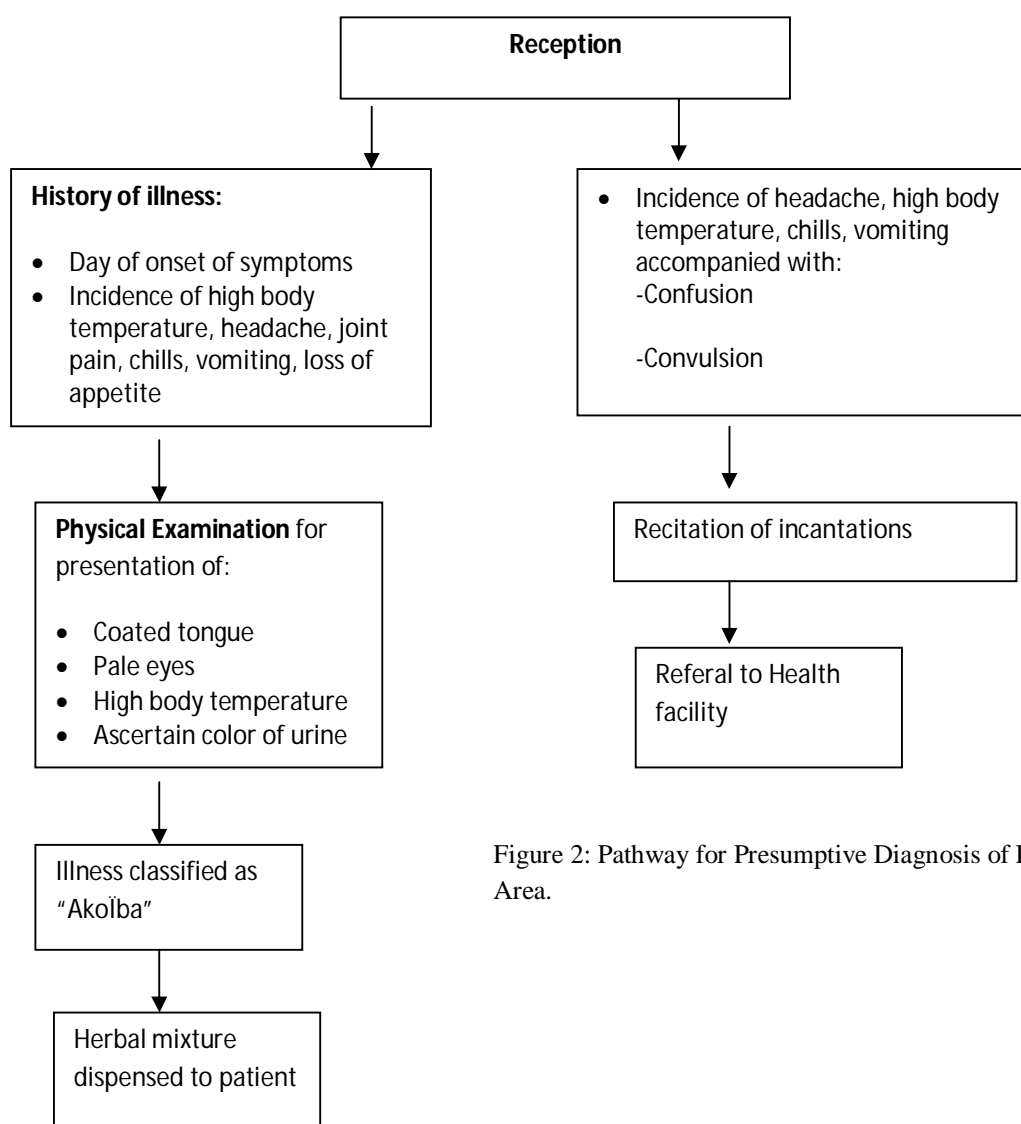Table 1: Local Terminologies and Classification of Fevers in the Study Area
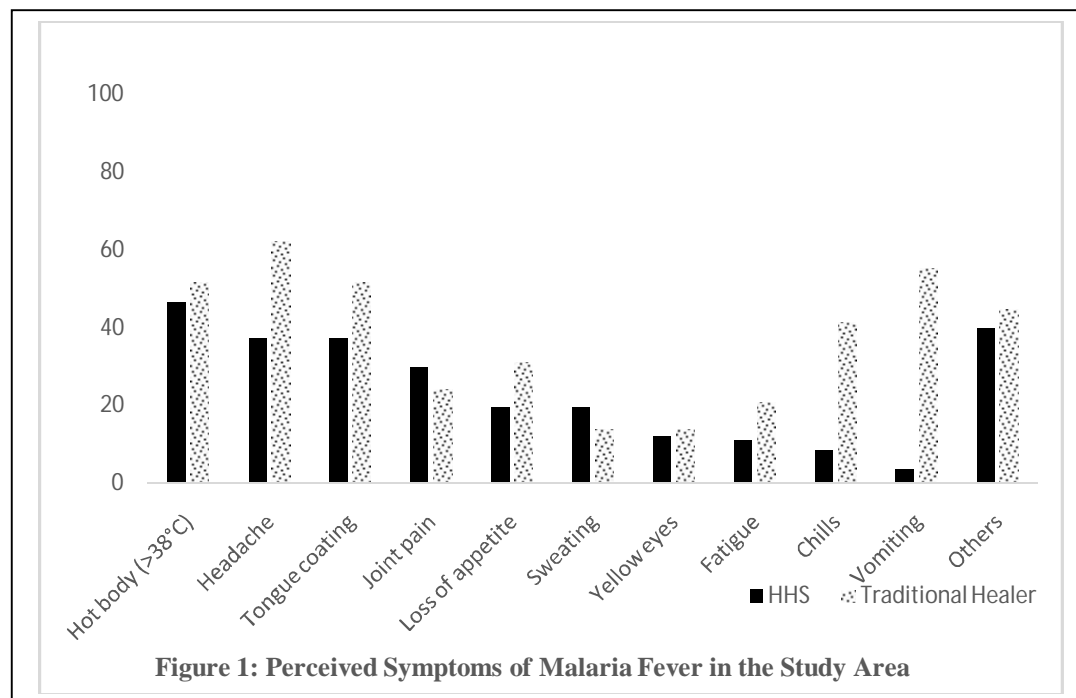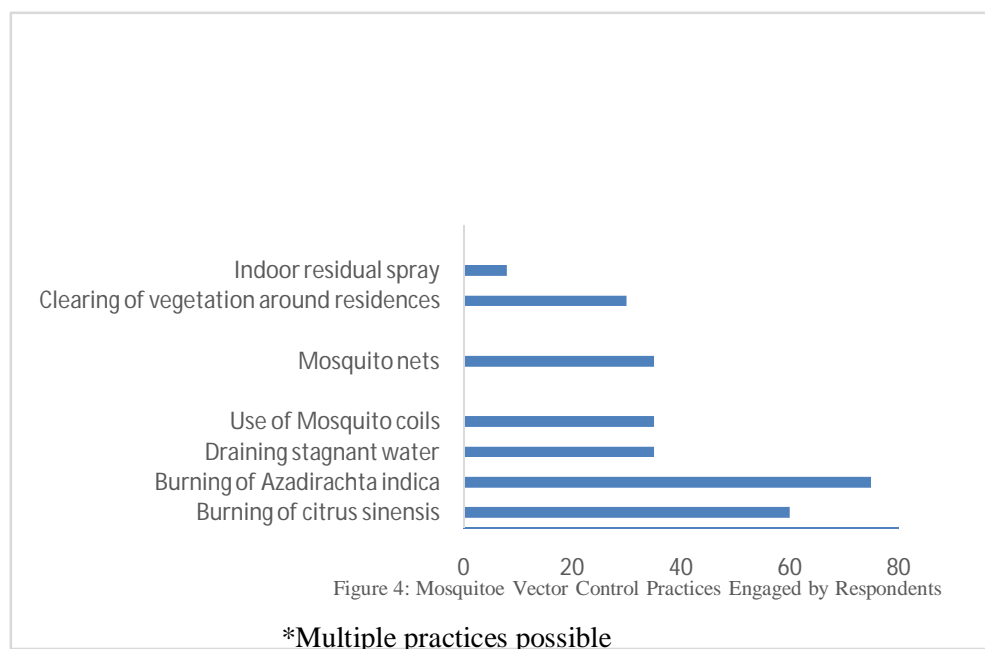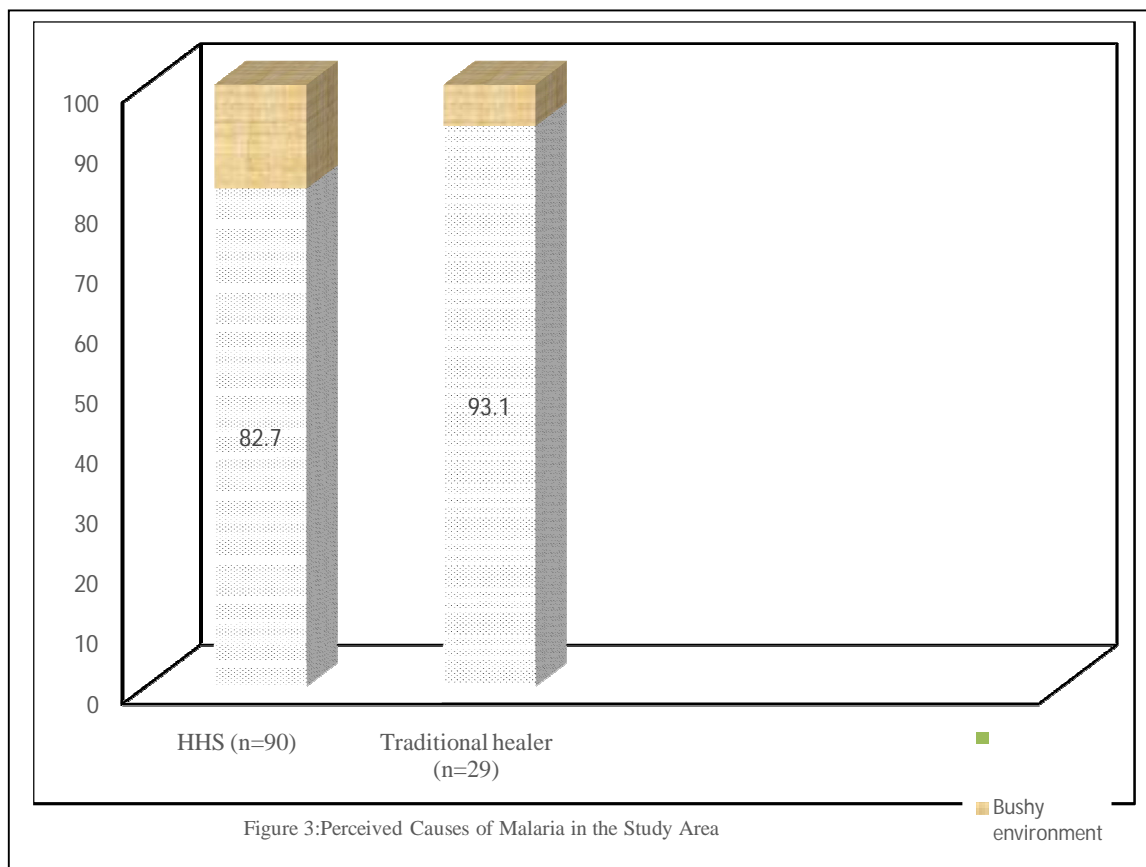
Figure 1: Perceived Symptoms of Malaria Fever in the Study Area

Figure 2: Pathway for Presumptive Diagnosis of Fevers in the Study Area.

Local Name	Specie Name	Proportion of respondents citing plant	Part Used	Preparation Method	Route of Administration
Akoko	*Newbouldia leavis*	47	Leaves	Decoction	Oral
Awopa	*Enatiachloranta*	56	Leaves	Decoction	Oral
Ogbogbo	*Eupatorium odoratum*	66	Leaves	Decoction	Oral
Abere-aluko	*Brideliamicrantha*	31	Stem-bark, Leaves	Concoction	Oral, bath
Ibepe	*Carica papaya*	47	Dried leaves	Decoction	Oral
Omisinmisin	*Abrusprecatorius*	28	Stem-bark	Decoction	Oral
Awun	*Astoniaboonei*	85 ( )	Stem-bark, Leaves, root	Concoction	Oral, bath
Osan	*Citrus sinensis*	64	Stem-bark, Leaves	Concoction	Oral
Dongoyaro imi-ewure	*Azadirachta indica*	87	Stem-bark, Leaves root	Concoction	Oral, bath
Mangoro	*Magnifera indica*	61	Stem-bark	Decoction	Oral
Lefi	*Zingiberofficinale*	46	Rhizome	Decoction	Oral
Idi-odan	*Alchorneacordifolia*	39	Stem-bark	Decoction	Oral
Asunwon	*Cassaalata*	66	Stem-bark, Leaves	Concoction	Oral
Oruwo	*Morindalucida*	51	Leaves	Infusion	Oral
Ogbo	*Tithoniadiversifolia*	77	Stem-bark, Leaves	Decoction	Oral
Ewuro	*Vernoniaamygdalina*	55	Leaves	Infusion	Oral
Ejinrin	*Momordicabalsamina*	71	Leaves	Infusion	Oral
Abere	*Picralimanitide*	58	Leaves	Decoction	Oral
Ogede	*Musa paradisiace*	47	Dried leaves	Decoction	Oral
Efinrin	*Ocimum sanctum*	57	leaves	Cold water infusion	Oral
Oka-eye	*Cymbopogongiganteus*	49	Leaves	Decoction	Oral
Olele	*CajanusCajan*	77	leaves	Decoction	Oral

Table 2: Medicinal Plant species reported in the study area for the treatment of malaria (n=90)

Decoction is a method of preparation in which the plant part is boiled in water. Concoction is a method of preparation in which more than one plant part is boiled in water. Infusion is a method of preparation that involves soaking of a plant part in water.

Figure 3:Perceived Causes of Malaria in the Study Area

■ Bushy environment

Figure 4: Mosquitoe Vector Control Practices Engaged by Respondents

*Multiple practices possible

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