



UDC 364; DOI 10.18551/rjoas.2022-05.02

ATTITUDINAL BEHAVIOUR OF RURAL DWELLERS TOWARDS UTILIZATION OF SELECTED MEDICINAL PLANTS FOR MALARIA TREATMENT IN EGBEDA LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

Oke O.O., Adeoye A.S.*, Abegunrin O.O., Olayemi O.O., Odeyale O.C.

Federal College of Forestry Ibadan, Oyo State, Nigeria

*E-mail: saadeoye06@gmail.com

ABSTRACT

The study investigated the attitudinal behavior of rural dwellers towards utilization of selected non-timber forest products, NTFPs medicinal plants for malaria treatment in Egbeda Local Government Area of Oyo State. A well-structured questionnaire was used for data collection from 120 respondents through purposive sampling procedure. Both descriptive and inferential statistics were used for the study analysis. The result showed that about 55.9% of the respondents were male with about 68.6% of the respondents within the age range of 46-55 years. Majority of them had primary education (43.1%) and farming (80.4%) is their major occupation. The finding also showed that a total of 14 species of medicinal plants were used for malaria treatment by the respondents in the study area. Results revealed that medicinal plants part frequently used by the respondents were leaves of bitter leaf (100%), tea bush (100%), siam weed (100%), pawpaw (97.9%) and moringa (97.9%), The extracts were consumed in liquid form by the respondents. Majority of the respondents strongly agree to the use of medicinal plants for malaria treatment. There was significant relationship between the factors contributing to utilization of selected medicinal plants and attitude of respondents ($r = -0.322$, $p = 0.001$). Hence, it was recommended that government agencies and non-governmental agencies should put more effort to work by ensuring conservation and establishments of these medicinal plants as natural way of building immune system of man against malaria parasites.

KEY WORDS

Attitude, non-timber forest products, utilization, malaria, treatment.

Malaria is the most important parasitic disease in the tropic and remains of highest public health importance. In 2019 an estimated 5.2 million children under 5 years of age died mostly from preventable and treatable causes such as malaria, pneumonia and so on (WHO, 2020).

The Federal Ministry of Health (FMOH) in 2013 reposed that malaria transmission in Nigeria is endemic and slightly above 90% of the population lives in areas with stable malaria. It is one of the leading causes of childhood morbidity and mortality with a prevalence rate of 919/100,000 and is responsible for 25% and 30% of infant mortality and childhood mortality respectively. Further, Dawaki *et al.* (2016) submitted that most Nigerians suffer the world's greatest malaria burden. Studies have shown some significant risk of infection in urban areas with uncontrolled increased population in the urban centers (WHO, 2010). The presence of swamps, gutters and thick vegetation in the cities enhances breeding of mosquitoes (Anumudu *et al.*, 2006). Also, another contributing factor to malaria outbreak is a resultant increase of mosquito bites from farming practices around household dwellings (Ojimiwe, 2013). Oladepo *et al.*, (2010) encapsulated that such practices as the use of irrigation during rice cultivation, the use of ponds for fish farming and the storage of water in tanks for livestock creates a breeding space for anthropophylic mosquitoes. In Nigeria, malaria risks exist throughout the year in the entire country including urban areas (Dawaki *et al.*, 2016). The problem of rural-urban migration, the persistence of poverty in the population, environmental degradation and seemingly intractable problems in providing befitting housing, portable water, and adequate sanitation are common in many Nigerian cities which cumulatively enforce the risks of malaria infection (Greenwood, 2005).



The ultimate resort after home management treatment has failed is a transition to the hospitals (Brooker *et al.*, 2011). Moreover, the evidential fact about numbers of caregivers was centered on the use of various traditional medicines or herbal remedies in the management of malaria (Belonwu, 2011). According to the world Health Organization (WHO), herbal medicines are the first line of treatment for 60% of children with malaria fever in Nigeria, Ghana, Mali and Zambia (WHO, 2003). Plants are a great source of medicine useful in the treatment of various diseases (Bako *et al.*, 2005). Humans learnt to exploit plants for medicine almost as early as they cultivated them for food (Muhammad and Amusa, 2005).

Majority of Nigerians are known to consult traditional medicine as a result of poverty and disillusionment with conventional orthodox medical care (Busari and Mufutau, 2017). According to Oshikoya *et al.* (2008) among the multitude of herbal medicines in circulation in Nigeria, only about twenty have been registered by the National Agency for Food and Drug Agency and Control (NAFDAC) with most drugs being imported. The importance of ethno-medicine in Nigeria healthcare has been recognized and in December, 2006 national government set up a high profile committee to develop, promote and commercialize traditional medicine products. People who become ill with the disease need prompt and effective treatment to prevent sudden rise in mortality rate (WHO 2003).

Globally, millions of deaths attributable to malaria are still being recorded. In Nigeria, according to the National Malaria Control Program of the WHO (2003), the disease is responsible for 60% outpatient visits to the hospitals, 30% childhood mortality, 25% of infant mortality of children under one year and 11% maternal deaths. The annual financial loss due to malaria annually is estimated to be about 132 billion naira in form of treatment costs, prevention and loss of man-hour, puts it that about 46% of an average household's income is expended on malaria treatment; hence the disease is a major cause of poverty in Nigeria (Vanguard News, 2017). In April 2000, the international community and the leaders of African nations met at a summit in Abuja, Nigeria and pledged to half the malaria mortality among African people by 2010 through the Roll Back Malaria (RBM) initiative (WHO, 2003).

These targets were further renewed to ensure that by 2010, 80% of vulnerable groups will benefit from preventive measures; 80% of pregnant women will have access to at least two doses in Intermittent Prevention Treatment (IPT) through the national drug policy on malaria in 2005 with transition from chloroquine to Artemisinin-based combination Therapies (ACTs). However, despite these efforts aimed at rolling back the spread of malaria, there is considerable evidence to indicate that herbal medicines are the first line treatment for 60% of children with high fever due to malaria in Nigeria (WHO, 2003). The objectives of the study are to examine the socio-economic characteristics of the respondents in the study area; identify the medicinal plants used by the rural dwellers; determine the types and forms of medicinal plants used by rural dwellers for malaria treatment; examine the attitude of rural dwellers in use of medicinal plants for malaria treatment; and identify the factors contributing to utilization of medicinal plants by rural dwellers in use of medicinal plants for malaria treatment. The hypotheses of the study are as follows:

H₀1: there is no significant relationship between socio economic characteristics of the respondents and attitude in use of medicinal plants for malaria treatment.

H₀2: there is no significant difference between plants and forms of medicinal plants used by the respondents for malaria treatment in the study area.

METHODS OF RESEARCH

This study was carried out in Egbeda local government of oyo state, Nigeria, Egbeda is a local government area in Oyo state, Nigeria. Its headquarters are in the town of Egbeda. The postal code of the area is 200109. It has an area of 191km² and a population of 281,573 at the 2006 census. Egbeda local government is subdivided into 11 wards: Erunmu, Ayede Alugbo/Koloko, Owobaale/Kasumu, Olodan/Ajiwogbo, Olodo IKumapayi I. Olodo II, Olodo III, Osegere/Awaye, Egbeda, Olode/Alakia and Olubadan Estate. The local government is headed by an elected chairman and 11 councilors elected from each ward.



The target populations of the study were the rural dwellers in Egbeda local government of Oyo state, Nigeria.

Purposive sampling procedure was used for this study sample sampling. Egbeda local government Area of Oyo state was purposively selected for this study due to the availability of medical plants in the study area. There are 11 wards in Egbeda local government which are: Erunmu, Ayede/Alugbo/Koloko, Owobaale/Kasumu, Olodan/Ajiwogbo, Olodo/Kumapayi I, Olodo II, Olodo III, Osegere/Awaye, Egbeda, Olode/Alakia and Olubadan Estate. Six villages were selected using simple random selection: Erunmu, Ayede, Owobaale, Kasumu, Osegere, Egbeda, based on their large population, and 20 questionnaire were distributed in each chosen ward, and in all, 120 questionnaire were distributed in which 102 questionnaire were retrieved.

Descriptive statistics such as frequency table, bar chart and percentages were used to analyze all the objectives, while inferential statistics such as chi square will be used to analyses hypothesis1 and PPMC for hypothesis 2.

Analytical Model:

$$\chi^2 = \frac{\sum(O - E)^2}{E}$$

Where: χ^2 = Chi – square, O =Observed value, E=Expected value, \sum =Summation of the value.

Pearson product Moment correlation Model:

$$r = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{(n \sum X^2 - (\sum X)^2)(n \sum Y^2 - (\sum Y)^2)}}$$

Where: P = Pearson product Moment Correlation, \sum = Summation of the frequency, X= X-X, Y= Y-Y, X=Mean of the frequency, Y=Mean of the frequency.

RESULTS AND DISCUSSION

The result in Table 1 revealed the socio-economic characteristics of the respondents in the study area. The result shows that majority of the respondents (68.6%) is within age range of 46-55 years while about 20.6% of the respondents is within age range of 55 years. This indicates that most people affected by malaria sickness are adult population. This finding is corroborated by Dawaki *et al.* (2016) that most adult population in Nigeria carries the malaria parasite with less than 30% of this number coming down with illness. The gender shows that about 55.9% of the respondents were male. Further, 43.1% of the respondents had primary education. This result also showed that farming is the most predominant occupation (80.4%) in the study area. The majority of the respondents (60.8%) practice Christianity. This implies that majority of the respondents were practicing Christianity in the study area.

Table 2 shows fourteen (14) common non-timber forest medicinal plants used by the respondents for malaria treatment in the study area. According to United States Center for Disease Control and Prevention (2018), malaria parasites have developed resistance against most malaria drugs, hence there was need for alternative medicinal plants based combination. Therefore, the herbs commonly utilized by the respondents are found to be efficient and effective for malaria treatment in the study area.

Table 3 shows the parts of the medicinal plant used by the respondents in treatment of malaria in the study area. All the respondents (100.0%) used leaf of Siam weed, tea bush and bitter leaf in the treatment of malaria. This finding is supported by Adepoju (2005) who states that interest in medicinal plants as a re-emerging health aid has been fuelled by the rising costs of prescription drugs in the maintenance of personal health and wellbeing. About 97.9% of the respondents used pawpaw and moringa leaf, 84.7% of the respondents used tumeric leaf, 72.3% of the respondents used cotton leaf, 41.9% of the respondents used brimstone leaf, 3 9.5% of the respondents used neem leaf, 20.9% of the respondents used



mango leaf, 16.7% of the respondents used garlic leaf, while grape, lime, ginger had 0.0%. Majority of the respondents with 41.9% used neem bark in treatment of malaria, 36.7% of the respondents used mango bark, 36.5% of the respondents used Brimstone bark. Majority of the respondents with 100.0% used ginger root in treatment of malaria, 82.3% of the respondent used garlic root, 26.7% of the respondents use cotton root, 14.7% of the respondent used tumeric root, 2.0% of the respondents used pawpaw and moringa root while the rest of the common medicinal plants in the study area had 0.0%.

Table 1 – Socio-economic characteristics of the respondents (n = 102)

Variables	Frequency	Percentage
Age		
16-26	2	2.0
26-35	1	1.0
36- 45	8	7.8
46-55	70	68.6
≥ 56	21	20.6
Gender		
Male	57	55.9
Female	45	44.1
Education		
No formal education	20	19.6
Primary	44	43.1
Secondary	38	37.3
Occupation		
Farming	82	80.4
Trading	20	19.6
Religion		
Islam	38	37.2
Christianity	62	60.8
Traditional	2	2.0

Source: Field survey, 2020.

Table 2 – Selected NTFPs medicinal plants utilized for malaria treatment by rural dwellers

Common names	Local names	Scientific name
Tumeric	Haldi	<i>Curcuma longa</i>
Grape	Osangerepu	<i>Citrus paradise</i>
Neem	Dongoyaro	<i>Azadirachia indica</i>
Siam weed	Akintola	<i>Chromolaena odorata</i>
Tea bush	Ewe tea	<i>Cymbopogon citrates</i>
Bitter leaf	Ewuro	<i>Vernonia amygdalina</i>
Lime	Osanwewe	<i>Citrus aurantifolia</i>
Ginger	Ataile	<i>Zingiber officinale</i>
Cotton	OwirAyu	<i>Gossypium barbadense</i>
Garlic	Ayu	<i>Allium sativum</i>
Brimstone	Owuro	<i>Morinda lucida</i>
Mango	Mangoro	<i>Mangifera indica</i>
Pawpaw	Ibepe	<i>Carica papaya</i>
Moringa	Moringa	<i>Moringa oilefera</i>

Source: Field survey, 2020.

Majority of the respondents with 47.3% used mango leaf and bark, 22.8% use brimstone leaf and bark, 19.3% used neem leaf and bark while the rest had 0.0%. Majority of the respondent in the study area with 2.0% used, cotton, garlic, pawpaw and moringa leaf and' root, while the rest of the common medicinal plant had 0.0%. This is in line with Adepoju (2005) who stated that despite the advances made in orthodox medicine, there has been an increasing interest in complementary medicine particularly by those who have not benefited from previous treatment, by those who have apprehensions concerning the toxicity and safety of modern drugs, and by those who benefit from the holistic approach. This is further corroborated by Sofowora *et al.* (2013) that the available herbal remedies have become more popular in the treatment of ailments and on the costs of health maintenance.



Table 3 – Part of NTFPs medicinal plants utilized for malaria treatment

NTFPs plants	Leaf (L)%	Bark (B)%	Root (R) %	L/B %	L/R%
Tumeric	85(84.7)	0(0.0)	15(14.7)	0(0.0)	2(2.0)
Grape	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Neem	40(39.5)	42(41.9)	0(0.0)	20(19.3)	0(0.0)
Siam weed	102(100.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Tea bush	102(100.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Bitter leaf	102(100.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Lime	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Ginger	0(0.0)	0(0.0)	102(100.0)	0(0.0)	0(0.0)
Cotton	73(72.3)	0(0.0)	27(26.7)	0(0.0)	2(2.0)
Garlic	17(16.7)	0(0.0)	83(82.3)	0(0.0)	2(2.0)
Brimstone	42(41.9)	37(36.5)	0(0.0)	23(22.8)	0(0.0)
Mango	21(20.9)	37(36.7)	0(0.0)	44(43.3)	0(0.0)
Pawpaw	98(97.9)	0(0.0)	2(2.0)	0(0.0)	2(2.0)
Moringa	98(97.9)	0(0.0)	2 (2.0)	0(0.0)	2(2.0)

Source: Field survey, 2020.

The results from Table 4 reveals that majority of the respondents (100.0%) used grape, lime, and bitter leaf in liquid form, 96.7% of the respondents used pawpaw, siam weed, Tea bush and moringa in liquid form, 78.3% of the respondent used Tumeric in liquid form while 50.5% of the respondents used mango in liquid form 48.0% used Brimstone liquid, 29.4% used ginger and cotton in liquid, 25.5% of the respondent used garlic in liquid and 16.1% of the respondent used Neem in liquid form. Majority of the respondent with 65.3% used Neem in powder form. 4.2% of the respondent used ginger in powder, 36.3% of the respondent used garlic also in powder, 20.7% used Tumeric in powder form, 17.6% used cotton in powder form, 2.0% of the respondent used pawpaw, siamweed, tea bush, mango and moringa in powder form, while the rest of the common medicinal plant had 0.0%. Majority of the respondents with 52.9% used cotton in both forms, 48.5% of the respondents used brimstone and mango in both forms, 38.2% used garlic in both forms, 29.4% of the respondents used ginger in both forms, 17.9% used neem in both forms, 2.0% of the respondents used pawpaw, siam weed, tea bush, tumeric and moringa in both forms while the rest of common medicinal plants in the study area had 0.0%. However, Nigerian researchers have developed herbal cures for malaria that can take care of resistant strains. They have produced potent anti-malaria cocktails from local plants. A typical cocktail developed by a plant taxonomist at the University of Nigeria Nsukka (UNN) and Ebonyi State University, Professor Jonathan Okafor, consists of *Morinda lucida*, *Nauclea latifolia*, *Cymbopogon citratus*, *Carica papaya* leaves, *Moringa oleifera*, *Mangifera indica*, *Carcinia kola*, and *Psidium guajava*. Its preparation involves getting the leaves of *Morinda lucida* which is commonly called local cinchona and Eze Ogwu in Igbo, while Oruwo in Yoruba.

The results in Table 5 shows that majority of the respondents with 80.4% strongly agree that medicinal plants can be used to cure any disease, also 60.8% of the respondents strongly agree on medicinal plants are more effective than orthodox medicine, 56.9% of the respondents strongly agree on I prefer medicinal plants to treat malaria to orthodox medicine, also 53.9% strongly agree that medical plants can be used as first aid treatment before seeking professional advice. Majority of the respondents with 47.1% agree on medicinal plants are more accessible in treatment of malaria than orthodox medicine, also 42.2% agree that medicinal plants can be used as first aid treatments before seeking professional advice, 30.4% of the respondents also agree I use medicinal plants for malaria treatment without doctor's prescription, while Majority of the respondents with 55.9% undecided that Dosage in medicinal plants are very difficult to know than orthodox medicine and 37.3% undecided on Absence of primary health care makes them to use medicinal plants to treat malaria in the study area. Furthermore majority of the respondent with 63.7% disagree that Use of medicinal plants is very dangerous in treatment of malaria, 51.0% of the respondents disagree that Medicinal plants has side effects than orthodox medicine and 46.1% of the respondents disagree with used medicinal plants for malaria treatment without doctors' prescription.



Table 4 – Forms of NTFPs medicinal plants utilized

Medicinal plants	Liquid %	Powder %	Both %
Neem	17 (16.7)	67 (65.3)	18 (17.9)
Pawpaw	98 (96.7)	2 (2.0)	2 (2.0)
Grape	102 (100.0)	0 (0.0)	0 (0.0)
Cotton	30 (29.4)	18 (17.6)	54 (52.9)
Garlic	26 (25.5)	37 (36.3)	39 (38.2)
Ginger	30 (29.4)	42 (41.2)	30 (29.4)
Brimstone	49 (48.0)	4 (3.9)	49 (48.0)
Siam weed	98 (96.7)	2 (2.0)	2 (2.0)
Tea bush	98 (96.7)	2 (2.0)	2 (2.0)
Lime	102 (100.0)	0 (0.0)	0 (0.0)
Bitter leaf	102 (100.0)	0 (0.0)	0 (0.0)
Tumeric	79 (78.3)	21 (20.7)	2 (2.0)
Mango	51 (50.5)	2 (2.0)	49 (48.5)
Moringa	98 (96.7)	2 (2.0)	2 (2.0)

Source: Field survey, 2020.

Lastly majority of the respondents with 67.6% strongly disagree that Medicinal plants can cause harmful effect to the body when I use it, 60.8% disagree that Medicinal plants can be used to treat malaria only, 56.9% also disagree I used both medicinal plants and orthodox medicine for malaria treatment. This is so because the community's culture and values directs the pattern of illness and health care (Akpenpoom & Terungwa, 2015) thus, the value a society holds regarding health care plays an important part in the development and use of health services.

Table 5 – Attitude of rural dwellers towards utilization of NTFPs medicinal plants

Attitudinal statements	SA	A	U	D	SD
Medicinal plants are more effective than' orthodox medicine	62(60.8)	25(24.5)	15(14.7)	0(0.0)	0(0.0)
Medicinal plants are more accessible in treatment than orthodox medicine	39(38.2)	48(47.1)	15(14.7)	0(0.0)	0(0.0)
medicinal plants are cheaper than orthodox medicinal	54(52.9)	21(20.6)	15(14.7)	0(0.0)	2(11.8)
I used both medicinal plants and orthodox medicine for malaria treatment	0 (0.0)	29(28.4)	15(14.7)	0(0.0)	58(56.9)
Medicinal plants can cause harmful effect to the body when I use it	0(0.0)	0(0.0)	0(0.0)	33(32.4)	69(67.6)
Medicinal plants has side effects than orthodox medicine	22(21.6)	13(12.7)	0(0.00)	52(51.0)	15(14.7)
I use medicinal plants for malaria treatment without doctors' prescription	0(0.0)	31(30.4)	2(2.0)	47(46.1)	22(21.6)
Use of medicinal plants is very dangerous in treatment of malaria	0(0.0)	17(16.7)	0(0.0)	65(63.7)	20(19.6)
Medicinal plants can be used to treat malaria only	2(2.0)	22(21.6)	0(0.0)	16(15.7)	62(60.8)
Dosage in medicinal plants are very difficult to know than orthodox medicine	0(0.0)	5(4.9)	57(55.9)	25(24.5)	15(14.7)
Medicinal plants as drugs is very stressful to prepare than orthodox medicine	0(0.0)	25(24.5)	20(19.6)	57(55.9)	0(0.0)
Absence of primary health care makes me to use medicinal plants to treat malaria	22(21.6)	24(23.5)	38(37.3)	18(17.6)	0(0.0)
I prefer to use medicinal plants to treat malaria to orthodox medicine	58(56.9)	7(6.9)	37(36.3)	0(0.0)	0(0.00)
Medicinal plants can be used to cure any disease	82(80.4)	2(2.0)	18(17.6)	0(0.0)	0(0.0)
Medicinal plants can be used as first aid treatment before seeking professional advise	55(53.9)	43(42.2)	4(3.9)	0(0.0)	0(0.0)

Source: Field survey, 2020.

The result in the Table 5.1 shows that 47.9% of the respondents have low response based on their attitude while 52.1% of the respondents have high response rate with favorable disposition towards the use of medicinal plants in the study area.

Table 5.1 – Categorization of respondents based on attitude behavior of the respondents

Variables	Frequency	Percentage	Mean
Low (Unfavorable)	49	47.9	42.5
High (Favorable)	53	52.1	
Total	102	100	

The result in Table 6 reveals that 77.5% agree that high cost of orthodox medicine is a major factors contributing to utilization of medicinal plants by respondents. This finding is



supported by Hoareau and DaSilva (1999) who says herbal medicinal preparations are more in demand than mainstream pharmaceutical products. Furthermore majority of respondents with 72.5% agree that absence of inventory of useful plants is a minor constraint, and 52.0% of increase demand of herbal medicine is also a minor constraint. Lastly majority of the respondents with 92.2% says that Technical knowhow is not a constraint in the study area, and climatic change with 74.5% is also not constraint in the study area.

Table 6 – Factors contributing to utilization of medicinal plants by rural dwellers

Factors contributing to utilization of medicinal plants	Major	Minor	None
Increase demand of herbal medicine	0 (0.0)	53 (52.2)	49 (48.0)
High cost of orthodox medicine	79 (77.5)	1 (1.0)	22 (21.6)
Some medicinal plants are not available again	77 (75.5)	2 (2.0)	23 (22.5)
Climatic change	22 (21.6)	4 (3.9)	76 (74.5)
Absence of inventory of useful plants	2 (2.0)	74 (72.5)	26 (25.5)
Technical know-how	6 (5.9)	2 (2.0)	94 (92.2)

Source: Field survey, 2020.

In summary, the result in the Table 6.1 shows that 77.4% of the respondents have high response towards contributing factors to use of medicinal plants in the study area.

Table 6.1 – Categorization of respondents based on factors contributing to utilization of medicinal plants

Variables	Frequency	Percentage	Mean
Low	23	22.6	13.0
High	79	77.4	
Total	102	100	

The result in Table 7 reveals that there is significant relationship between the socioeconomic characteristics of the respondents; age ($\chi^2 = 80.489$, $p < 0.05$), gender ($\chi^2 = 90.447$, $p < 0.05$), education ($\chi^2 = 60.033$, $p < 0.05$), occupation ($\chi^2 = 14.537$, $p < 0.05$), religion ($\chi^2 = 18.021$, $p < 0.05$), in the study area. This result indicates that there was favorable contribution from socio-economic characteristics of the respondents contribute to respondents' attitudinal behavior.

Table 7 – Chi-square analysis of socioeconomic characteristics of respondents

Variables	χ^2 -value	p-value	Decision
Age	80.489	0.000	S
Gender	90.447	0.000	S
Education	60.033	0.000	S
Occupation	14.537	0.001	S
Religion	18.021	0.001	S

Source: Data analysis, 2020.

Table 8 – PPMC analysis of relationship between the factors contributing to utilization of medicinal plants and respondents' attitudinal behaviour

Variables	r-value	p-value	Decision
Factors contributing to utilization of medicinal plants and attitudinal behaviour	-0.322	0.001	Significant

Source: Data analysis, 2020.

Table 8 shows that there is significant relationship between contributing factors and the attitude of rural dwellers towards the use of medicinal plants in the study area.

CONCLUSION

The study showed that majority of the respondents' age (68.6%) was in the age range of 46-55. Also, the majority of the respondents involved in the utilization of selected NTFPs



plants were males. About 43.0% of the respondents had primary education with farming as their major occupation. The findings also revealed the 14 selected NTFPs medicinal plants commonly used by the respondents in the study area. Furthermore, majority of the respondents either use the selected plants in the liquid or the powdery form for malaria treatment. Majority of the respondents, strongly agree to the use of medicinal plants for cure of any disease whereas about 67.6% of the respondents strongly disagree to the use of medicinal plants which could result to harmful effect to the body when wrongly dispensed. Finally, the constraint faced by the rural dwellers towards the use of medicinal plants for malaria treatments in the study area includes high cost of orthodox medicine and due to extinction of certain herbs used in the past for malaria treatment. However, based on the findings of the study, it was recommended that government agencies and non-governmental agencies that have interest on medicinal plants for malaria treatment should put more effort to work by ensuring conservation and establishments of these plants. Also, there should be an enlightenment program through government and non-governmental organizations to further encourage the usage of medicinal plant in treatment of malaria in rural areas as natural way of building immune system of man against malaria parasites.

REFERENCES

1. Adepoju, G.K. (2005). The attitudes and perceptions of urban and rural dwellers to traditional medical practice in Nigeria: A comparative analysis'. *International Journal of Gender and Health Studies* 3 (1&2): 90-201.
2. Akpenpuum, J.R. and Terungwa, M. (2015). Perception of malaria and treatment seeking behavior among rural dwellers in Nigeria. *Global J. Interdiscipl. Soc. Sci.* 4 (2): 1-6. Available at www.gifre.org
3. Anumundu, C.I, Adepoju, A., Adediran, M., Adeoye, O., Kassim, A., Oyewole, I. and Nwuba, R.I. (2006). Malaria prevalence and treatment seeking behavior of young Nigerian adults. *Annals of African Medicine.* 5 (2): 82-86. Available at <http://www.bioline.org.br/pdf>
4. Bako, S.P., Bakfur, M.J., John, I. and Bala, E.I. (2005). Ethno-medicinal and phytochemical profile of some Savanna plants in Nigeria. *International Journal of Botany* 1 (2): 147-150. Available at <https://www.researchgate.net>>...
5. Belonwu, M. (2011). Attitude to and use of traditional medicinal in the treatment and management of malaria in Nigeria: Case study of Anambra State. Msc. thesis submitted to Institute for Development Studies (IDS), University of Nigeria, Nnsuka, Enugu Campus. Available at <http://www.unn.edu.ng/files>
6. Brooker, C, Nicol, M. and Alexander, M.F. (2011). Alexander's nursing practice E-book: Hospital and home- the adult. Available at <https://books.google.com.ng/books>
7. Busari, A.A. and Mufutau, M.A. (2017). High prevalence of complementary and alternative medicine use among patients with sickle cell disease in tertiary hospitals in Lagos, southwest, Nigeria. *BMC complementary & Altern. Med.* 17 (299): 3-8 Available at <https://bmccomplementmedtherapies.biomedcentral.com>
8. Dawaki, S., Al-Mekhlafi, H.M., Ibrahim, J., Atroosh, W.M., Abdusalam, A.M., Sady, H., Elyana, F.N. (2016). Is Nigeria winning the battle against malaria? Prevalence, risk factors and KAP assessment among Hausa communities in Kano. *Malaria Journal* 15 (351): 1-14. Available at <https://malariajournal.biomedcentral.com>>...
9. Federal ministry of health, FMOH (2013). Knowledge attitudes and practices about malaria and its control in rural area in Nigeria. *Malaria Research and Treatment.* Vol. 2010. Article ID 794261.
10. Greenwood, B. (2005). Malaria vaccines: Evaluation and implementation. *Acta Tropica* 95 (3): 298-304. Available at <https://www.sciencedirect.com>
11. Hoareau, L. and DaSilva, E.J. (1999). Medicinal plants: A re-emerging health aid. *EJB Electronic Journal of Biotechnology* 2 (2): 1-6. Available at <http://www.ejbiotechnology.info>>p...



12. Muhammad, S. and Amusa, N.A. (2005). The important food crops and medicinal plants of North-Western Nigeria. *Res. J. Agric. & Biol. Sci.* 1 (3): 254-260. Available at <https://www.researchgate.net>>...
13. Ojimiwe, O.C. (2013). Malaria control and its discontents: A critical examination of the emerging discourse of seriousness in development assistance. A thesis submitted for doctoral degree in the faculty of humanities, University of Manchester, United Kingdom. 212 pages. Available at www.research.manchester.ac.uk
14. Oladepo, O., Tona, G.O., Oshiname, F.O. and Titiloye, M.A. (2010). Malaria knowledge and agricultural practices that promote mosquito breeding in two rural farming in Oyo State, Nigeria. *Malaria Journal* 9: 91 Available at <https://malariajournal.biomedcentral.com>>...
15. Oshikoya, K.A., Senbanjo, I.O., Njokanma, O.F. and Soipe, A. (2008). Use of complementary and alternative medicine for children with chronic health conditions in Lagos, Nigeria. *BMC complementary & Altern. Med.* 8 (66): 1-8 Available at <https://bmccomplementmedtherapies.biomedcentral.com>
16. Sofowora, A., Ogunbodede, E. and Onayade, A. (2013). The role and place of medicinal plants in the strategies for disease prevention. *Afr. J. Tradit. Complement. Altern. Med.* 10 (5): 210-229. Available at doi. 10.4134/ajtcam.v10i5.2
17. United States Center for Disease Control and Prevention (2018). Malaria notices: Drug resistance reviewed. July 23, 2018. Available at <https://www.cdc.gov>>drug_resistance
18. Vanguard News (2017). Tackling malaria scourge through preventive interventions. Vanguard Newspaper, Online, May 16, 2017. Available at www.vanguardngr.com
19. World Health Organization, WHO (2020). Children: Improving survival and well-being. Available at <https://www.who.int>>...>
20. World Health Organization, WHO (2003). The Africa malaria report- 2003. 118 pages. Available at <http://whqlibdoc.who.int>>W...
21. WHO (2010). Malaria prevention during pregnancy: Awareness and factor contributing to disease occurrence among pregnant women in Gboko Metropolis, Benue State, Nigeria. *Journal of Medicine and Biomedical Sciences* ISBN 2078-027.105.