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Utilization and Effectiveness of Herbal Medicine in Treatment of Malaria in Osun State

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Abstract

Concern among health professionals has been raised by the ongoing rise in the prevalence of malaria in recent years. Herbal treatments have been deemed the most popular form of traditional medicine in Africa and a high percentage used it for malaria treatment. Poor health care services with unaffordable malaria have been a major barrier to malaria control. This study investigated the use and effectiveness of traditional medicine in treatment of malaria in Osun State, Nigeria. 15 people with malaria across the three senatorial districts of Osun State were selected, using snow balling sampling techniques. Experimental design was utilised to assess the level of knowledge on malaria. Descriptive survey was used to assess the use of traditional medicine, and true experiments to test efficacy of herbal medicine. This study found that respondents have inadequate knowledge of traditional medicine for treatment of malaria and lack adequate knowledge that anopheles mosquito cause malaria. However, use of traditional medicine is high among respondents, with most of the listed herbs achieving a significant point for mean (2.5). Majority of respondents either have malaria parasites hibernated and experience malaria relapse later or the herbal medicine used were ineffective in the first place. The effectiveness of these combined herbs is also dependent on the intensity of the malaria infection. The study concluded that traditional medicine is effective among just in a few of the respondents, who combined, prepared herbs appropriately and took it as prescribed by experienced herbs experts.

Keywords; Malaria, Treatment of malaria, Herbal medicine.

Introduction

The continual increase in the prevalence of malaria in recent times have been a source of concern among health experts [1]. Aside the fact that, malaria control has been a long debated issue, with various efforts towards achieving the control, lack of appropriate vaccine has been a major barrier [2]. In Nigeria, malaria is endemic, and it affect every part of the country. Aside from this, the effect of malaria infection on individuals, family and communities is huge. [3] estimated that 229 million malaria cases were reported, with 409,000 deaths in 2019. In 2018, there were 228 million cases of malaria recorded, with 411,000 deaths. Africa bears the

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highest burden of global death caused by malaria. [3] reported that Africa was home to 94% of malaria cases and deaths. [4] estimated that, there were 214 million cases of malaria in 2015 and 429,000 deaths globally. Malaria is a common infectious disease that is widespread in most tropical regions of the world, especially Asia and Sub-Saharan African countries where malaria infects about 515 million persons a year and is responsible for 1.5 to 2 million deaths per annum [4].

Previous studies have shown that malaria pose economic, physical, and mental consequences for people [5].

Malaria incidence has become pronounced due to climatic change: this led to an increase in temperature of the planet over time, a condition that aid survival of mosquitoes. Therefore, in recent times, the increase in warmth in the atmosphere provide conducive temperature for mosquitoes to infest and infect humans. This continually contributed to malaria relapse overtime, thereby reducing the capacity of recommended anti-malaria drugs [5]. This is most peculiar to areas characterized by nearby rivers or streams, dams, bush, among others. Relapse of malaria symptoms is a bad sign and has continually negated the primary objectives of the health care in Nigeria, which built on ensuring sustainable health care rendition.

Malaria before now have been found to have created resistance against paracetamol, Chloroquine among others [6]. The recent Atemeter lumefatrine combinations is gradually becoming ineffective in the face of variability in the risk factors for malaria occurrence among which climatic change is major. However, there have been a divided opinion on the efficacy of herbal medicine, as alternative medicine in treatment of malaria, among researchers. This led to the discovery of numerous herbal-bound antimalarial compounds with significant structural varieties including quinines, triterpenes, sesquiterpenoids, quassinoids, limnoids, alkaloids, lignans, and coumarins [6, 7].

Herbal treatments have been deemed the most popular form of traditional medicine (TM) in Africa and a high percentage used it for malaria treatment [8]. This was also corroborated in [9] who reported that increasing trends in the use of TM implies healthcare services could not satisfy the need of people. This is further explained by poor health care services with unaffordable malaria treatment. While some attributed use of TM to its affordability compared to as the primary health service [10]; others found that communities residing in areas where the healthcare facilities are not accessible tend to find other methods of treatments [11]. Furthermore, cultural affinity which is typical of people of southwestern Nigeria have been found to contribute towards patronage of traditional medicine [12]. However, malaria is still the deadliest human parasitic infection in the world [13]. According to [14], Nigeria bears more than a quarter of the global burden of malaria. Nationally, 97% of the population are at risk of the disease. The result is that malaria accounts for an estimated 60% of out-patient hospital visits, 30% of hospital admissions and 11% of maternal mortalities in the country [15]. This study sought to assess the level of knowledge on malaria including the use and effectiveness of herbal medicine in treatment of malaria in Southwestern Nigeria.

Methodology

Study Design

Experimental design was adopted to cater for quantitative aspect of the study, while descriptive survey aided the quantitative aspect of the study. Experimental design was used where there is time priority in a causal relationship (cause precedes effect), there is consistency in a causal relationship (a cause will always lead to the same effect), and the magnitude of the correlation is great. The causal relationship in this study is to test efficacy of herbal medicine in treatment of malaria. Potential for vaccine related information will also be checked. In this study true experiments

will be conducted, using individuals who have been confirmed to be infected with malaria (RDT and MP test will be employed).

Sample and Sampling Technique

This study selected 15 people with malaria across the three senatorial district of Osun State, who are used to taking herbal medicine for malaria treatment. For the experimental, 15 participants was selected across rural areas in Osun State, using snow balling sampling techniques.

Procedure for Data Collection

Five (5) persons with malaria was selected from each senatorial across villages. Those areas were visited, and potential participants were consulted and tested for malaria parasite at the time of this study. The head of villages consulted us and informed us when anyone showed major symptoms we listed. Then registered nurses were sent to the said person to test the participants using rapid diagnosis test (RDT). After the malaria parasite was confirmed, a blood sample was further collected for laboratory confirmation of malaria parasite. Then the participant was allowed to take herbal concoction, they usually take whenever they are sick with malaria. The participants were further monitored by the nurse assigned for two weeks and another blood sample were collected to evaluate if malaria parasite remained in the blood stream.

Data Analysis

Data collected was analyzed manually and presented using Table.

Results

Demographic Characteristics of Respondents

Table 1 above presents Frequency Distribution of Demographic Characteristics of the Respondents. On sex of the respondents, 33.5% were male, while 66.5% were female. Majority were female. Regarding the age of the respondents, 25.9% were 18-37 years old, 45.4% were 38-57 years, 23.6% were 58-77 years old, while 5.1% were 78years and above. About tribe, 61.7% of the respondents. Were Yoruba, 11.8% of the respondents were Igbo, 2.9% were Hausa, while 23.6% chose others such as Middle belt such as, Egede, Kogi, among others. About religion of the respondents, 56.3% were Christians, 37.6% were Muslims, while 5.8% practiced any of the African traditional religion. About marital status of the respondents, 23.3% were single, 70.0% were married, 4.5% were separated and 2.2% were divorced. On Occupation, 48.6% were traders, 1.3% were Laborers, 5.8% were students, while 24.9% were unemployed and 19.4% were others. Also 23.6% attended only primary school, 35.2% attended secondary schools, 18.5% attended tertiary institutions and 22.7% had no formal education.

Table 1. Frequency Distribution of Demographic Characteristics of the Respondents

Question	Frequency	Percentage
Sex		
Male	315	33.5
Female	624	66.5
Total	**939**	**100.0**
Age		
18-37 years	243	25.9
38-57 years	426	45.4
58-77 years	222	23.6
78 years & above	48	5.1
Total	**939**	**100.0**
Tribe		

Yoruba	579	61.7
Igbo	111	11.8
Hausa	27	2.9
Others	222	23.6
Total	**939**	**100.0**
Religion		
Christianity	529	56.3
Islam	356	37.9
Traditional	54	5.8
Total	**939**	**100.0**
Marital status		
Single	219	23.3
Married	657	70.0
Separated	42	4.5
divorced	21	2.2
Total	**939**	**100.0**
Occupation		
Traders	456	48.6
Labourers	12	1.3
Students	54	5.8
Unemployed	234	24.9
Others	183	19.4
Total	**939**	**100.0**
Level of education		
Primary school	222	23.6
Secondary schools	330	35.2
Tertiary institutions	174	18.5
No formal education	213	22.7
Total	**939**	**100.0**

Source: Field survey, 2022

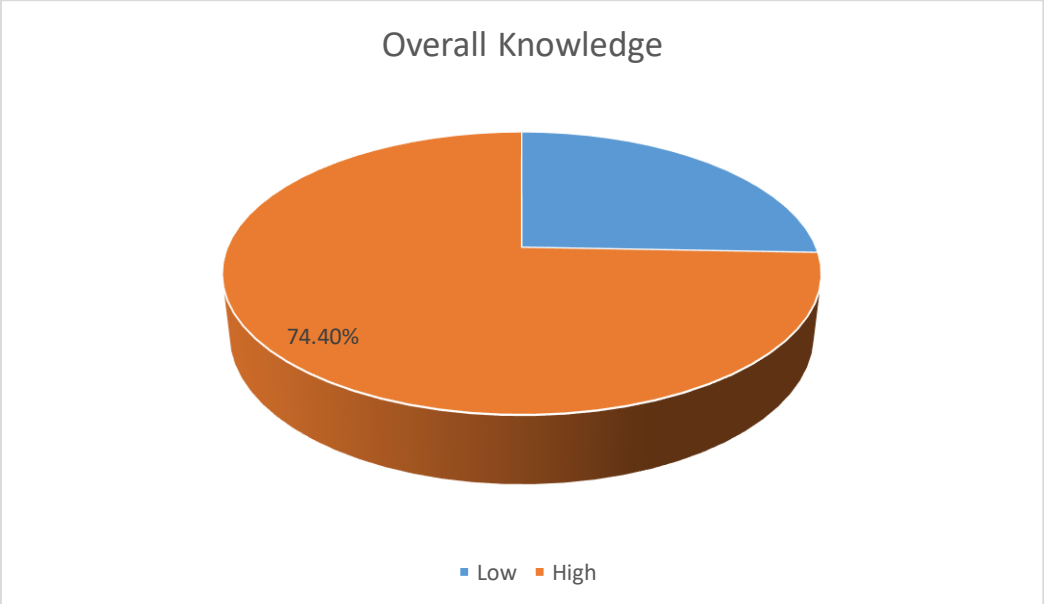

Figure 1. Overall, Knowledge

Table 2 presents frequency distribution of the respondents on use of traditional medicine for treatment of malaria. The majority (VO= 30.6%; O=42.2%) affirmed that they use ewe oronbo (lime leaves), 11.8% rarely use it, while 15.3% never use it. Also, a higher percent (VO=24.6%; O= 31.3%) said Dogonyaro (Neem leaves, stem bark and roots), 27.2% rarely use it, 16.9% never use it. More so, a higher percent (VO=19.5%; O= 35.8%) opines that, Ekpomangoro (mango bark and leaves), 33.2% rarely use it, 11.5% never use it. Furthermore, a higher percent (VO= 22.0%; O= 30.0%) affirmed that Ewe osan (orange leaves), 38.0% rarely use it, 9.9% never use it. Result also shows that, a higher percent (VO= 21.7%; O= 29.4%) of the respondents Eweti (Lemon grass), 42.0% rarely use it, 6.1% never use it. Also, a few (VO= 22.6%; O= 27.5%) held that, Ewe kasu (cashew leaves), 17.9% rarely use it, 31.0% never use it. More so, a higher percent (VO= 28.4%; O= 23.0%) opines that, Ibepe (paw-paw leaves), 23.6% rarely use it, 24.9% never use it. Furthermore, a higher percent (VO= 20.4%; O= 30.4%) affirmed that Ewe ogedeparanta (plantain leaves), 30.0% rarely use it, 19.2% never use it. Result also shows that, a higher percent (VO= 26.8%; O= 24.0%) of the respondents believes that Gwava (guava leaves), 24.7% rarely use it, 24.6% never use it. Furthermore, a few (VO= 14.1%; O= 21.7%) affirmed that Ewe okporokporo (corn leaves), 49.5% rarely use it, 14.7% never use it. Result also shows that, few (VO= 11.8%; O= 19.5%) of the respondents believes that Ewe ewuro (Bitter- leaves), 46.3% rarely use it, 22.4% never use it.

Table 2. Frequency Distribution of Respondents showing Ranking Order on Use of Traditional Medicine

s/n	Items		VO	O	R	N	Total
1	Ewe Oronbo (Lime leaves)	**F**	288	396	81	144	**939**
		%	30.6	42.2	11.8	15.3	**100.0**
2	Dogonyaro (Neem leaves, stem bark and roots)	**F**	231	294	255	159	**939**
		%	24.6	31.3	27.2	16.9	**100.0**
3	Ekpomangoro (Mango bark and leaves)	**F**	183	336	312	108	**939**
		%	19.5	35.8	33.2	11.5	**100.0**
4	Ewe osan (Orange leaves)	**F**	207	282	357	93	**939**
		%	22.0	30.0	38.0	9.9	**100.0**
5	Eweti (Lemon grass)	**F**	394	276	212	57	**939**
		%	42.0	29.4	22.6	6.1	**100.0**
6	Ewe Kasu (Cashew leaves)	**F**	222	258	168	291	**939**
		%	23.6	27.5	17.9	31.0	**100.0**
7	Ibepe (Paw-paw leaves)	**F**	267	226	222	234	**939**
		%	28.4	23.0	23.6	24.9	**100.0**
8	Ewe Ogedeparanta (Plantain leaves)	**F**	192	285	282	180	**939**
		%	20.4	30.4	30.0	19.2	**100.0**
9	Gwava (Guava leaves)	**F**	252	225	231	231	**939**
		%	26.8	24.0	24.6	24.6	**100.0**
10	Ewe Okporokporo (Corn leaves)	**F**	132	204	465	138	**939**
		%	14.1	21.7	49.5	14.7	**100.0**
11	Ewe Ewuro (Bitter- leaves)	**F**	101	183	435	210	**939**
		%	11.8	19.5	46.3	22.4	**100.0**

Efficacy of Traditional Medicine

Table 3 below presents experimental results on exposure to mosquito bite. Results shows that, most (OP, AA, SA, BS, AD, DS, OB, NS, NA, OP, SO and PS) of the respondents were highly exposed to mosquito bites. Only about three (AB, UG, DD) respondents were moderately exposed to mosquito bite.

Table 3. Exposure to Mosquito Bite

s/n	Individual Respondents	Residents
1	**OP**	Highly Exposed
2	**AA**	Highly Exposed
3	**SA**	Highly Exposed
4	**BS**	Highly Exposed
5	**AD**	Highly Exposed
6	**AB**	Moderately Exposed
7	**DS**	Highly Exposed
8	**OB**	Highly Exposed
9	**UG**	Moderately Exposed
10	**NS**	Highly Exposed
11	**NA**	Highly Exposed
12	**OP**	Highly Exposed
13	**DD**	Moderately Exposed
14	**SO**	Highly Exposed
15	**PS**	Highly Exposed

Table 4 below presents symptoms before traditional medicine. The most significant symptoms experience by respondents include, running nose, general body weakness, fever, cough and cold, Leg pain, mouth blister, sour tongue, and headache.

Table 4. Subject's Symptom before Traditional Medicine

s/n	Individual Respondents	Major Symptom
1	**OP**	Running nose
2	**AA**	Body weakness
3	**SA**	Cough and Cold
4	**BS**	Severe Fever
5	**AD**	Leg pain,
6	**AB**	Cold
7	**DS**	Body weakness
8	**OB**	Fever
9	**UG**	Mouth blister
10	**NS**	Sour tongue
11	**NA**	Headache
12	**OP**	Fever
13	**DD**	Body Weakness
14	**SO**	Mouth blister
15	**PS**	Cold

Table 5 below presents malaria status of respondents as evidence using RDT and laboratory blood test. The above results shows that all the respondents test positive to both RDT and Clinic Malaria test.

Table 5. Malaria Status Before

s/n	Individual Respondents	RDT	Clinic Blood Test
1	**OP**	+	+
2	**AA**	+	+
3	**SA**	+	+
4	**BS**	+	+
5	**AD**	+	+
6	**AB**	+	+
7	**DS**	+	+
8	**OB**	+	+
9	**UG**	+	+
10	**NS**	+	+
11	**NA**	+	+
12	**OP**	+	+
13	**DD**	+	+
14	**SO**	+	+
15	**PS**	+	+

Table 6 below presents malaria status 2-weeks after use of traditional medicine. The results shows that, two weeks after respondents used their various traditional medicine, a few (BS, NS, SO) evaluated negative to RDT and laboratory blood test malaria infection. Although, while some respondents (OP, AD, AB, DS, OP and DD) still evaluated negative to RDT but positive to laboratory blood test, six respondents (AA, SA, OB, UG, NA and PS) tested positive to RDT and laboratory blood test.

Table 6. Malaria Status 2-Weeks after Use of Traditional Medicine

s/n	Individual Respondents	RDT	Clinic Malaria test	Effective/ Hibernation/Relapse
1	OP	-	+	H
2	AA	+	+	H
3	SA	+	+	R
4	BS	-	-	E
5	AD	-	+	H
6	AB	-	+	H
7	DS	-	+	H
8	OB	+	+	R
9	UG	+	+	H
10	NS	-	-	E
11	NA	+	+	R
12	OP	-	+	H
13	DD	-	+	H
14	SO	-	-	E
15	PS	+	+	H

Discussion

Findings in this study revealed that, on a general note, respondents have inadequate knowledge (31.7%) of traditional medicine for treatment of malaria. Although most of the respondents understood common symptoms of malaria, yet majority did not know that anopheles mosquito causes malaria. More so, respondents lacked adequate knowledge that traditional medicine for malaria treatment do not have exact prescription, exact measurement, may do some harm than good and could lead to more complex problem. This agrees with [16, 17] who affirmed that, good knowledge of any public health disease by individuals and communities seems necessary if effective treatment and preventive measures are to be realistic. Findings also revealed that use of traditional medicine is extremely high among the respondents. This was evidenced in the fact that most of the listed traditional herbs attained a significant point for mean [2, 5]. More so, the ranking depicted that, Ewe Oronbo (lime leaves), Dogonyaro (Neem leaves, stem bark and roots) and Ekpomangoro (mango bark and leaves) are the most used herb, among others. This is supported by [18] who found that over 80% of the population particularly in developing countries depend directly on plants for their primary healthcare requirements. This also agrees with [19] in a research conducted in Kebbi, Nigeria, who found that, herbs used in the treatment of malaria: Azadirachta indica (neem leaves), Magifera indica (Mango leaves), Citrus aurantifolia (lime), Carica papaya (paw-paw leaves), and Psidium gujava (guava leaves).

Finding shows that, most of those respondents were exposed to malaria bite, ever before they were consulted. This is probably because most of the respondents live across rural areas in Osun State. These areas are characterized by bush, thick forest, waterlogged, open doors, open window without nets, among others. These factors permitted easy access for malaria to bites respondents [20]. This however corroborate the malaria status of respondents. More findings show that only a few [3] respondents experienced effectiveness of some combined herbal medicine use in treatment of malaria. Most others that use herbal medicine, either have malaria parasites hibernated and experienced malaria relapse later or the herbal medicine used were ineffective in the first place. More findings shows that malaria parasite is also forming resistance against some herbal concoction used. This is because some respondents, who claim the regular herbs use has been effective for them, still test positive for malaria parasite after taking the same concoction. The findings imply that, only some rightly combined herbal concoction are effective enough to treat malaria. More finding revealed that the effectiveness of these combined herbs in treatment of malaria is also dependent on intensity of the malaria infection. The implication is that, when the right herbs are combined and prepared appropriately as concoction, then taken as prescribed, it works effectively for malaria treatment, as well as protecting the user for some months against re-occurrence of malaria.

Conclusion

The study concluded that, traditional medicine is effective among just a few of the respondents, who combined, prepared herbs appropriately and take it as prescribed by experienced herbs experts.

Conflict of Interest

There are no conflicts of interest related to this research, the author declares.

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