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Cultural categorization of febrile illnesses in correlation with herbal remedies used for treatment in Southwestern Nigeria

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Abstract

The ethnographic study was conducted in two communities in Oyo State in Southwestern Nigeria. The study sites consisted of a rural and an urban local government area located in the tropical rain forest zone of Nigeria. The study was designed to obtain information on febrile illnesses and herbal remedies for treatment with the aim of identifying potential antimalarial drugs. The study revealed that fever is a general term for describing illnesses associated with elevated body temperature. The indigenous Yoruba ethnic population has categorized fever based on symptoms and causes. The present communication is the result of focus group discussion and semi-structured questionnaire administered to traditional healers, herb sellers, elders and mothers. This was on types of fevers, symptoms and causes of febrile illnesses. The investigation also included use of traditional herbs in the prevention and treatment of the illnesses in the two communities.

A total of 514 respondents were interviewed. This was made up of 266 (51.8%) from Atiba local government area (LGA), an urban centre while 248 (48.2%) respondents were interviewed from Itesiwaju LGA, a rural community. The LGAs are located in Oyo State of Nigeria. The respondents proffered 12 types of febrile illnesses in a multiple response answering system in Yoruba language. The most common ones (direct translation into English) were: yellow fever (39.1%), typhoid (34.8%), ordinary (28.8%), rainy season (20.8%) and headache (10.5%) fevers, respectively. Perceived causes of each of the febrile illnesses included stress, mosquito bites, unclean water, rains and over exposure to the sun. Methods of fever prevention were mainly with the use of herbal decoctions, powdered herbs, orthodox medications and maintenance of proper hygiene.

Of a total of 112 different herbal remedies used in the treatment of the febrile illnesses compiled from the study, 25 recipes are presented. Recipes consisted of 2–7 ingredients. Oral decoctions (84%), oral powders (63%), use as soaps and creams (40%) in a multiple response system, were the most prevalent routes of administration of prepared herbs used in the treatment of the fevers. Boiling in water or alcohol was the most common method used in the preparation of the remedies. The four most frequently mentioned (multiple response system) plants in the Southwest ethnobotany for fevers were *Azadirachta indica* (87.5%), *Mangifera indica* (75.0%), *Morinda lucida* (68.8%) and *Citrus medica* (68.8%).

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1. Introduction

In the last 20 years, drug discovery utilizing ethnopharmacology and traditional uses of herbal remedies have received a lot of attention. Plant products such as morphine, quinine and tubocurarine have been used as templates for the design of new therapeutic compounds (Phillipson and Wright, 1991; Phillipson, 1994). From one of such plants in the Chinese

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ethnomedicine, Artemisinin was isolated from *Artemisia annua* and various derivatives of artemisinin are being used for the treatment of malaria infections (Lugt, 2000).

In African ethnomedicines, it is well known that traditional healers make use of a large variety of herbs in the treatment of parasitic diseases including malaria and a wide proportion of herbal remedies dispensed by traditional healers are widely believed by their clients to be effective (Kirby, 1997; Warrell, 1997). In another study (Etkin, 1997), antimalarial plant medicines used by the Hausa in Northern Nigeria was compiled. The morbidity and mortality of falciparum malaria are seen in children under the age of 5 years. In indigenous African communities, only 8–25% of people with malaria visit health services (Brinkmann and Brinkmann, 1991), this has necessitated the investigation into African ethnobotany and ethnomedicine. For the first time, the categorization, causes and corresponding herbal recipes used for their treatment of each mentioned febrile illness in South-west Nigeria, are presented from the Nigeria.

The objective of the present study was to obtain information on characterization of febrile illnesses and the utilization of phytomedicines for treatment of fevers in Southwestern Nigeria. In the indigenous communities, fever (*Iba*), is a general term for describing all diseases with elevated body temperatures including malaria. The practical control of malaria relies mainly on early diagnosis and treatment, so it became necessary to survey the ethnobotany in Nigeria and determine how malaria is diagnosed and differentiated from other febrile illnesses before herbal treatment. The overall contribution is to enhance the development of antimalarial drugs from the Nigerian phytomedicine in continuation of our studies (Ajaiyeoba et al., 1999), of identification and clinical evaluation of potential antimalarial components from the Nigerian flora.

2. Materials and methods

2.1. Study areas

The study areas consisted of rural and urban communities, Itesiwaju and Atiba LGAs, respectively. Itesiwaju local government is a totally rural community. The residents are mostly farmers. The town lacks the usual social amenities and has a low-density population. Atiba LGA on the other hand, a community of civil servants and traders, is densely populated. It is in the Oyo town and links Western Nigeria to the Northern Nigeria through Kwara state. The town has social amenities such as electricity supply and pipe borne water. The residents of both areas belong to the Yoruba ethnic group.

2.2. Advocacy visits

Advocacy visits were made to the traditional healers association in the study communities to explain the purpose of

the study to them and obtain their cooperation. The health workers at the primary health care department of the communities were visited. Familiarization visits were also made to community leaders and opinion leaders in the community to solicit their support in the study.

2.3. Training of interviewers and pretest

Research assistants did the pre-testing of instruments. They were trained over a period of 1 week by the investigators. After they had satisfactorily performed, they were allowed to commence with the pretest. The pretest was carried out in Akinyele and Egbeda local government areas thereafter, amendments were made to the instruments before the main study.

2.4. Informed consent

The objectives of the study were explained to the intending participants. Informed consent was obtained from each of the participants. An approval for the study was obtained from the traditional healers' association of the respective communities.

2.5. Development of study instruments

2.5.1. Translation of instruments into Yoruba language

The study instruments were prepared in English language and were translated into Yoruba language before administration of the instruments in both communities.

2.5.2. Focus group discussion

A total of eight focus group discussions (FGDs) were held. Four of the FGDs (two among men and women who were less than 45 years and two among men and women who were older than 45 years) were conducted in Atiba LGA. Four other groups with similar composition were conducted in Itesiwaju LGA, targeted at the general populace. The respondents were traditional healers, herb sellers, elders and mothers. The discussions were recorded on audiotapes for ease of reference. Important issues were documented.

2.5.3. General questionnaire

Following the FGD, a semi-structured questionnaire was administered to mothers, community leaders, traditional healers, herbalists, herb sellers and adults in the community. A total of 514 respondents were interviewed. In addition to demographic characteristics of the respondents, the questions addressed include:

- (i) Types of fever, causes and people at risk.
- (ii) Treatment of fevers.
- (iii) Herbal preparations and methods of administration.

3. Results

3.1. Focus group discussion (FGD)

Analysis of the focus group discussions indicated fever, stomach pain, cough, convulsion, cholera, diarrhoea, body-ache, dizziness, typhoid fever, diabetes, ulcer, tetanus, shivers and teeth eruption as common illnesses among children. Illnesses reported among adults were fever, joint pain, headache, body-ache, stroke, cholera, back pain, toothache, chills and catarrh. Other illnesses listed were dermatitis, hernia, dizziness and allergy. The participants further mentioned "internal heat", oedema, vomiting, worm infestation, malaria, yellow fever, typhoid fever, bleeding, cough, weakness and numbness as the common illnesses among pregnant women.

The participants categorized fever as ordinary fever, typhoid fever, yellow fever, tiredness fever and rain fever. Other categories were blood-sucking fever, fever associated with elevated body temperature alone and body-ache fever.

Most of the participants mentioned mosquito bite as the cause of fever, others mentioned were drinking unclean water and eating unhygienic food, staying in the rain for a long time, over exposure to sun, physical exertion, dust, too much water, unclean environments, spicy food, anaemia and housefly.

The use of herbal remedies at home was identified, as a major treatment while attendance of orthodox health care centres, such as hospitals was a follow up where herbal remedies did not produce relief.

On drugs commonly used in treating fevers, participants mentioned analgesics, chloroquine, multivitamin preparation. All these drugs were said to be effective but itching was an undesirable effect resulting from chloroquine use. No dosage was mentioned.

Many plants were mentioned by respondents for the treatment of febrile illnesses, these included *Dongoyaro* (Neem), Mango, Citrus, Paw-paw, among others. Dosage for herbs is a "handful" for children and "one cup" for adults depending on the method of preparation.

For the improvement of treatment, participants suggested research into traditional medicine, co-operation between traditional healers and orthodox doctors, availability of traditional medicine, provision of drugs and personnel to health facilities.

3.2. Cultural characterization of febrile illnesses

3.2.1. Respondent's demographic

The respondents included mothers, fathers, adult members of the community leaders/elders, herbs sellers and traditional healers. The ages of the respondents ranged between 14 and 95 years with a mean age of 40 ± 15.7 years. Most of the respondents 333 (64.8%) were Moslems, 160 (31.1%) Christians, 16 (3.1%) traditional religion practitioners while 5 (0.9%) did not respond to the question on religion.

Table 1
The types of fever commonly mentioned

Types of fever		Percentages ^a
Local name ^b	English translation	
<i>Iba ponju</i>	Yellow	39.1
<i>Iba taifod</i>	Typhoid	34.8
<i>Iba lasan</i>	Ordinary	28.8
<i>Ibajo</i>	Rainy season	20.8
<i>Iba orififo</i>	Headache	10.5

^a Multiple response.

^b Local name in Yoruba.

One hundred and ninety-six respondents (38.1%), had no formal education, 140 (27.2%) had primary school education and 117 (22.7%) had secondary education. Seventy-five percent of the respondents were married.

3.2.2. Types of fever, perception of causes and people at risk

Almost all the respondents 495 (96.3%) had heard of fever and 12 different types of fever were described in the indigenous language. The five frequently mentioned fevers are listed in Table 1. The other mentioned fevers were fever due to exhaustion (*orere*), blood sucking fever, fever associated with elevated body temperature alone, dry season fever, dizziness fever, severe fever and body-ache fever.

Specifically, the strongest notions of causes of fever are listed in Table 2. For blood sucking fever, 20% of the respondents mentioned mosquito bite as the major cause of fever while 33% of the respondents mentioned rain. Forty-seven percent of the respondents associated bad water with typhoid fever and 11% associated over-exposure to sun to fever characterized by elevated temperatures. Forty-five percent of the respondents associated stress with yellow fever. Other causes of fever mentioned are dust, exhaustion, supernatural cause, bangs on the head, strange and bad food, catarrh, blood dysfunction, lack of hygiene, premature birth and hereditary.

The duration of these fevers ranged from 1 to 90 days. Respondents claimed that everyone was at risk of contracting any of the types of fever. However, specific groups like the light complexioned people, pregnant women, farmers, people who do not eat balanced diet and people living in dirty areas were mentioned as being at risk of rainy season

Table 2
Types of febrile illness and perceived causes

Types of fever	Percentages ^a				
	Stress	Mosquito bites	Bad water	Rains	Too much sun
Yellow	44.5	13.4	11.6		16.9
Typhoid	4.1	5.4	47.3	2.0	0.7
Ordinary	17.2	36.1	1.6	2.5	22.1
Rainy season	10.0	10.0	2.5	33.8	11.3
Headache	2.3	4.3			

^a Multiple response.

Table 3
Types of febrile illness and perceived symptoms

Types of fever	Percentages ^a							
	Headache	High body temperature	Chills	Body pain	Loss of appetite	Yellow eyes/urine	Weakness	Dizziness
Yellow	7.2	11.5	9.1	12.0	6.3	58.2	15.1	1.9
Typhoid	11.4	7.4	2.3	8.6	5.7	13.1	10.3	2.9
Ordinary	26.6	28.1	23.0	18.5	5.2	10.4	25.2	4.4
Rainy season	13.8	23.8	58.8	16.3	1.3	5.0	12.8	2.5
Headache	50.9	11.8	7.8	9.8	2.0	3.9	13.7	2.0

^a Multiple response.

fever, yellow fever, ordinary fever, typhoid fever, headache fever and fever due to tiredness.

3.2.3. Fevers and associated symptoms

The frequently mentioned symptoms associated with the most commonly fevers are enumerated in Table 3. Elevated body temperature was reported as the major symptom for rainy season fever, ordinary fever, yellow fever and typhoid fever. Other symptoms not listed in the table were insomnia, vomiting, stomach pain, catarrh, thirst, blood dysfunction, dark stool and yawning.

3.2.4. Seasonality and occurrence

Most of the fevers mentioned occur all year round. However, yellow fever, ordinary fever, typhoid fever, and headache fever were reported to be more common during the dry season while rainy season fever is during the rainy season.

3.2.5. Methods of preventing different types of fevers

The preventive measures mentioned for different types of fever varied (Table 4). Aqueous or alcoholic extract of herbs (22.6%), powdered herb (22.6%) were frequently mentioned for the prevention of yellow fever. The use of orthodox drugs (20.1%) and aqueous or alcoholic extract of herbs (13.0%) were mentioned for prevention of typhoid fever. In addition, the use of orthodox drugs (25.0 or 26.3%) and aqueous or alcoholic extract of herbs (26.6 or 34.7%) were frequently mentioned for the prevention of ordinary or rain fever. Other preventive measures are cleanliness, eating balance diet, medicinal herbal scarification, use of herbal soaps and reduction in physical exertion. The use

of insecticide, avoiding direct sun rays, use of mosquito bed/window nets, and having adequate rest were also preferred. Some respondents, however, believed no adequate preventive measure that could be taken against fever.

Table 5
Recipes used for the treatment of febrile illnesses in Southwestern Nigeria

Fever	Recipes
Yellow	<ol style="list-style-type: none"> 1. <i>M. lucida</i> (b), <i>C. medica</i> (j), <i>M. indica</i> (l), <i>Carica papaya</i> (wl) and <i>Cymbopogon citratus</i> (l)^a 2. <i>A. indica</i> (l), <i>C. medica</i> (l) and <i>C. citratus</i> (l)^a 3. <i>A. indica</i> (b, l), <i>Anarcadium occidentale</i> (l) and <i>A. occidentale</i> (b)^a 4. <i>A. indica</i> (l), <i>C. medica</i> (l), <i>C. citratus</i> (l) and <i>C. papaya</i> (l)^a 5. <i>M. indica</i> (l), <i>Khaya grandifoliola</i> (l), <i>M. lucida</i> (l) and <i>A. occidentale</i> (l)^a
Typhoid	<ol style="list-style-type: none"> 1. <i>A. indica</i> (b), <i>M. indica</i> (b), <i>Solanum erianthum</i> (b), <i>C. papaya</i> (wl) and <i>C. citratus</i> (l)^a 2. <i>C. medica</i> (j), <i>Gossypium barbadense</i> (l), <i>M. lucida</i> (l), <i>A. indica</i> (b) and <i>M. indica</i> (b)^a 3. <i>Cassia saemia</i> (l), <i>Chromolena odoratum</i> (l), <i>C. medica</i> (l), <i>C. citratus</i> (l), <i>C. papaya</i> (wl), <i>M. indica</i> (l), b, and <i>A. indica</i> (l)^a 4. <i>Vernonia amygdalina</i> (l) and <i>C. medica</i> (j)^b 5. <i>P. guajava</i> (l), <i>M. indica</i> (b, l) and <i>Bambusa vulgaris</i> (l)^a
Ordinary	<ol style="list-style-type: none"> 1. <i>C. citratus</i> (l), <i>Newboldia laevis</i> (l), <i>Lawsonia inermis</i> (l), <i>Citrus sinensis</i> (f) and <i>Zea mays</i> (ws)^a 2. <i>A. indica</i> (l), <i>C. citratus</i> (l) and <i>M. indica</i>^a 3. <i>N. laevis</i> (l) and Sprite^a 4. <i>L. inermis</i> (l), <i>C. medica</i> (f) and <i>Z. mays</i> (ws)^a
Rainy season	<ol style="list-style-type: none"> 1. <i>C. medica</i> (l), <i>Capsium annuum</i> (f) and <i>M. lucida</i> (l)^c 2. <i>A. indica</i> (l), <i>C. odoratum</i> (l), <i>L. inermis</i> (l), <i>C. citratus</i> and <i>C. papaya</i> (l)^a 3. <i>M. lucida</i> (l) and <i>O. gratissimum</i> (l)^c 4. <i>A. indica</i> (l), <i>C. medica</i> (j), <i>C. papaya</i> (l) and <i>C. citratus</i> (l)^a 5. <i>Mormodica charantia</i> (l), <i>C. medica</i> (j), <i>C. saemia</i> (l), <i>M. indica</i> (l) and <i>A. indica</i> (l)^a
Headache	<ol style="list-style-type: none"> 1. <i>M. lucida</i> (l) and <i>C. medica</i> (j)^c 2. <i>A. occidentale</i> (l, b), <i>M. indica</i> (l) and <i>C. medica</i> (j)^d 3. <i>O. gratissimum</i> (l), <i>C. medica</i> (j) and <i>C. sinensis</i> (j)^c 4. <i>C. papaya</i> (x)^d 5. <i>V. amygdalina</i> (l), <i>C. citrus</i> (l), <i>M. indica</i> (l) and <i>C. medica</i> (f)^a

Plant parts: l, leaves; wl, withered leaves; j, juice; b, bark; f, fruit; ws, water from fermented starch and x, non-fruiting stem.

Method of crude drug preparation: ^a boiling (in water); ^b steeping (in alcohol); ^c squeezing; ^d pounding.

Table 4
Methods of prevention of fever

Types of fever	Percentages ^a			
	Herbal liquid	Powder herb	Orthodox drug	Cleanliness
Yellow	22.6	22.6	39.5	13.7
Typhoid	13.0	1.3	20.1	9.1
Ordinary	25.0	3.1	26.6	17.2
Rainy season	26.3	3.2	34.7	6.3

^a Multiple response.

Different complications were associated with the types of fever mentioned. Death was a major complication cited. Others include: weight loss, insomnia, pile, convulsion, weakness, anaemia, illness, asthma, stroke, stomach ache, chills, yellow eyes, psychosis, sterility and vomiting. Some respondents said there are no complications associated with fever.

3.2.6. Treatment of fevers

Most respondents affirmed that traditional herbs were effective in treating the different types of fever mentioned. Different herbal recipes were mentioned in the treatment of the different types of fevers.

3.2.7. Herbal remedies, their preparation and methods of administration

A total of 112 herbal recipes used in the treatment of different febrile illnesses in Southwestern Nigeria were compiled (Ajaiyeoba et al., 2000). Twenty-five of these remedies are presented in Table 5. For each of the five febrile illnesses, five recipes are outlined. From the results in Table 5, boiling was the most common form of preparation. Soaking the plant materials in water for specific number of days was next. The third most common was crushing the herbs to extract the fluid in them. Oral administration was the most common route of administration followed by topical application (bathing/rubbing), inhalation and scarification. In most cases, the herbs were the sole treatment modality. It was not common to combine use of herbs with orthodox medicine. Majority of the respondents do not experience problems with the use of the herbs, however, a few of the respondents mentioned dizziness, anaemia, diarrhoea, stomach pain, vomiting, additional illness and itching.

4. Discussion and conclusion

Most of the febrile illnesses mentioned occurred all the year round. Yellow fever was the most commonly mentioned fever (39.1%), in the multiple response questionnaires. Other relevant ones mentioned were typhoid fever, ordinary season fever, rain fever and headache fever (see Table 1 for details). In these communities, ordinary fever suggests that no other appellation could be given to the febrile illness, meaning it could actually be due to malaria infection. Others were typhoid fever, yellow fever, high temperature fever and headache fevers, were reported to be more common during the dry season. Rain fever was reported to be more common during the raining season. One can infer that rain fever period coincided with the period of highest malaria transmission season and so this fever could be due to malaria infection.

The results of the perceived causes of the febrile illnesses are presented in Table 2. The proffered causes of respective febrile illnesses, among respondents were observed to be dependent on time of occurrence, seasonality and symptoms. Of these causes, stress (44.5%) was the most significant

for yellow fever, while bad water (47.3%) was the major cause of typhoid fever mentioned. However, for ordinary fever, mosquito (36.1%) was the major cause. This goes a step further to infer that ordinary fever could be due to malaria infection. The second highest cause was exposure to too much sun (22.1%). In the case of rainy season fever, the perceived cause was rains (33.8%). No significant cause could be perceived as causing headache fever as presented in Table 2.

Symptoms of the febrile illnesses are presented in Table 3. Yellow eyes and urine were the predominantly mentioned symptoms for yellow (58.4%) and typhoid (13.1%) fevers, respectively. Pyrexia (28.1%), headache (26.6%) and weakness (25.2%) were the perceived symptoms of ordinary fever. Rainy season fever symptoms were mainly chills (58.8%). Other symptoms were pyrexia and headache. Lastly, for headache fever, headache (50.9%) was the most mentioned symptom. Generally, the proffered symptoms in Table 3 suggest that symptoms associated with ordinary fever and rain fever are compactable with malaria. From literature, no other categorization, symptoms and causes of febrile illnesses have been reported hitherto in Southwestern Nigeria or from any other ethnobotany in Nigeria, or Africa, for comparative analysis.

Different methods of prevention were proffered for each of the febrile illnesses mentioned as presented in Table 4. These preventive measures were found to be linked with respondents' perceived causes.

The most important preventive method mentioned was *Agbo*, an aqueous or alcoholic extract of herbs, prepared by boiling (a few hours) or steeping (12–72 h). Pounding of dry plant material in a recipe with a wooden mortar and pestle gives the powdered herbs (*Agunmu*) usually taken in soups or maize pap, was another preventive method mentioned. The use of orthodox drugs and clean surroundings were other prophylactic measures perceived by the respondents. Dosages were dependent on the method of preparation. It ranged from a glass full (300 ml) when obtained from boiling or steeping in water/alcohol to 100 ml. When extract is obtained by squeezing the plant material to obtain exudates, then dosage would be between 5 and 20 ml. Powdered plant materials are given as a handful and eaten in maize pap or soups.

Death was a major complication associated with the types of fevers mentioned. Other complications were headache, body-ache, loss of appetite, weight loss, insomnia, convulsion, vomiting and so on. Some respondents indicated that there were no complications.

Most of the respondents confirmed the efficacy of traditional herbs mentioned and Table 5 gives details of recipes (five each) proffered for each fever. Remedies consisted of 1–7 ingredients, which were mainly prepared by boiling or steeping in water or alcohol.

The plant ingredients consisted of aerial plant parts, roots, fruits and juice. Others included non-fruiting stem and aqueous extract of fermented maize starch as presented

Table 6
List of plants commonly mentioned in the treatment of febrile illnesses in Southwest Nigeria

Plant in Yoruba	Botanical name	Plant part(s)	Frequency (%)
Eke	<i>A. indica</i> (Meliaceae)	Bark and leaves	87.5
Mangoro	<i>M. indica</i> (Anacardiaceae)	Bark and leaves	75.0
Oruwo	<i>M. lucida</i> (Rubiaceae)	Leaves	68.8
Osan wewe	<i>C. medica</i> (Rutaceae)	Leaves and juice	68.8
Ibepe	<i>C. papaya</i> (Caricaceae)	Leaves	56.3
Kasia	<i>Cassia</i> sp. (Caesalpinaceae)	Leaves	43.8
Ogano	<i>Khaya</i> sp. (Meliaceae)	Leaves	43.8
Koko Oyinbo	<i>C. citratus</i> (Gramineae)	Leaves	37.5
Kaju	<i>A. occidentalis</i> (Anacardiaceae)	Leaves	31.3
Sepeleba	<i>Tithonia diversiflora</i> (Asteraceae)	Leaves	31.3
Owu	<i>Gossypium</i> sp. (Malvaceae)	Leaves	25.0
Efinrin	<i>Ocimum gratissimum</i> (Labiatae)	Leaves	25.0
Omi edun agbado	<i>Z. mays</i> (Gramineae)	Extract ^a	18.8
Opo Oyinbo	<i>Ananas cosmos</i> (Bromeliaceae)	Fruit	18.8
Girepi	<i>Citrus decumana</i> (Rutaceae)	Juice	18.8
Ótíli	<i>Cajanus cajan</i> (Papilionaceae)	Bark	12.5
Alubosa	<i>Allium cepa</i> (Alliaceae)	Leaves	12.5
Goafa	<i>Psidium guajava</i> (Rutaceae)	Bark	12.5
Emile	<i>Euphorbia hirta</i> (Euphorbiaceae)	Whole	6.3
Ehin olebe	<i>Phyllanthus amarus</i> (Euphorbiaceae)	Leaves	6.3

^a Aqueous extract from fermented starch.

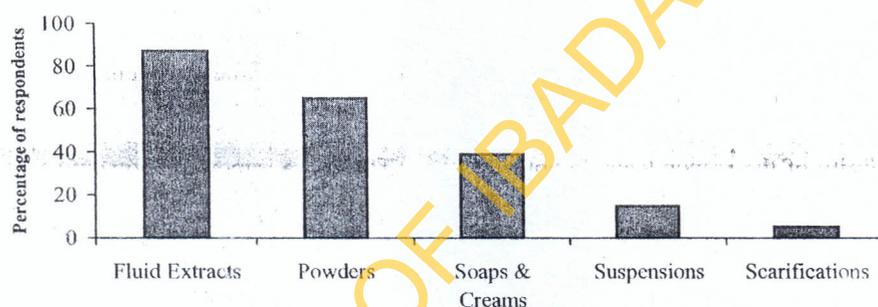


Fig. 1. Methods of administration of herbal remedies used for treatment of fevers.

in Table 6. The most commonly mentioned plant was Neem (75%, leaves and bark). Others were Mango leaves and bark (23%). Remedies consisted of 1–7 ingredients. From the results presented in Table 6, a great majority (96%) of the recipes contained the fruit or juice of a citrus species. The inference here could be addition of Vitamin C to the remedy to aid healing, similar to what obtains in orthodox medical practice.

Fig. 1 gives a representation of the methods of administration of the remedies. The commonest route of administration was oral, followed by topical (bathing/rubbing), inhalation and scarification. Combining the use of herbs with orthodox medicine was not common. Most of the respondents did not report experiencing problems with the use of herbs although a few specified dizziness, anaemia, diarrhoea, stomach pain, vomiting, itching and some other illnesses, which were not specified.

From the results of the ethnobotanical surveys in this study, one can conclude that, in Southwestern Nigeria, herbal

preparations are used for the prevention and treatment of the febrile illnesses. Respondents were knowledgeable about the causes of mentioned febrile illnesses, partly intermingled with some wrong notions. The causes of febrile illnesses proffered were affected by the belief of the traditional healer or caregiver. In categorizing febrile illnesses, alongside the causes and symptoms, ordinary fever and rainy season fever are the two illnesses compactable with malaria infection. The highest malaria transmission season is during the rainy season (March–September). Observation of the efficacy of the herbal remedies and microscopic clearance of *Plasmodium falciparum* has been done in a further study and the results will be presented elsewhere. Furthermore, based on the results of this study, the herbal ingredients identified from the Southwest Nigerian phytomedicine, are being investigated pharmacologically, in our laboratories (Malaria Research Group, in IAMRAT, University of Ibadan), to confirm efficacy of the plants for antiplasmodial/antimalarial properties.

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