

Ethnopharmacological Survey of Plants Used by Trado-Medical Practitioners (TMPs) in the Treatment of Typhoid Fever in Gomari Airport Ward, Jere Local Government Area, Borno State, Nigeria

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ABSTRACT

Objective: The aim of the work was to carry out an ethnopharmacological survey of plants used by trado-medical practitioners (TMPs) in the treatment of typhoid fever in Gomari Airport Ward in Jere Local Government Area, Borno State.

Methods: Ten (10) respondents (TMPs) were interviewed by primary data using pretested, validated and reliable 53-point structured questionnaire. The plants were identified and authenticated by a plant taxonomist and voucher specimens were prepared. Analysis of data was by cross sectional descriptive statistics.

Results: Results obtained showed that 22 plants from 18 families and 21 genera and 22 species were identified to cure salmonella infection. The family with the largest species was Caesalpinaceae (5 species). Trees were mostly used (41.67%) and the part of the plant used most frequently were the leaves (80.00%). Most TMPs had >15years experience in managing typhoid infection and many of the medicinal plant reipies involved a mixture of plants with only one (1) containing a single plant. Medications were mainly taken orally (90.00%) with 30.00% used as baths. Sometimes adjuncts were added to the plant.

Conclusion: Eventhough the efficacy of the remedies alluded to by the respondents cannot be calimed to be exact, the people used more herbal medicine than orthodox. This survey provides a template for further screening and research on these plants.

Keywords- Typhoid fever, Ethnopharmacological survey, Gomari airport, Trado-medical practitioners, Plants.

INTRODUCTION

Typhoid fever is a global infection¹ which is transmitted by eating food or taking water which is contaminated with the faeces of a person who is infected with and contain the bacterium, *Salmonella enterica*, Serovar *typhi* (often called *Salmonella typhi*)^{2,3}. The disease, apart from being a cause for concern is also a major public health issue in developing nations (like Asia and Africa), with Nigeria being of primary concern because of poor sanitary conditions and inadequate supply of water^{4,5}. According to the World Health Organization (WHO) there are six hundred thousand deaths from typhoid fever annually.^{2,6,7} Also, an annual infection rate of 21.6 million was also estimated by WHO⁶ with the highest percentage of these rates occurring in Africa and Asia. The large scale and indiscriminate use of antibiotics has led to microorganisms developing resistance, which is an adaptation system in which the microorganisms are no longer responding to drug concentrations to which they were previously susceptible. An unfortunate outcome of the large scale and indiscriminate use of antibiotics is the development of antimicrobial resistance as an adaptive response in which microorganisms begin to tolerate a concentration of drug to which it was previously susceptible. The development of mechanisms which circumvent or inactivate antibiotics is largely due to the versatility of the genes and the way the large number of microorganisms adapt. When plasmids coding for resistance to antibiotics are present in *S. typhi*, antibiotic resistance occurs. Allied to this issue of resistance is the transfer of plasmids which are resistant from one pathogen to another. Resistance has been observed to be carried out by one plasmid⁸. This plasmid belongs to incompatibility group H11 and is highly transmissible between similar pathogens.

Recent reports suggest that *S. typhi* will have one of these plasmids which lead to resistance of antibiotics⁹⁻¹¹.

Antibiotic resistance in *S. typhi* is an emerging and important public health issue because those who use antibiotics to treat diseases are uncompromising in their behaviour.¹²⁻¹⁴. An outbreak in Tajikistan in the late 1990s, accounting for over 24,000 infections was caused by a multidrug resistance (MDR) *S. typhi*.¹⁵

A multidrug resistant (MDR) *S. typhi* strain that was not sensitive to chloramphenicol and other first line recommended antibiotics like ampicillin and cotrimoxazole was discovered in many areas of Latin America Asia and Africa^{14,16}. While there can be resistance to a single antibiotic, the occurrence of multi-drug resistance by this bacterium has worsened the health problems¹⁷. *S. typhi* is one of the most resistant organisms with multidrug resistant phenotype in *S. typhi*.¹⁸ Resistant salmonella and infact other pathogens cause infections which lead to significant morbidity and mortality and make the healthcare cost to skyrocket worldwide. This study was therefore designed to document properly the plant flora that are used for treating typhoid fever by the indigenous people of Gomari Airport Ward in Jere Local Government Area of Borno State and to provide valuable information to encourage the conservation and sustainable utilization of plant wealth occurring in the area, which probably may reduce the cost of treatment. Also the occurrence of multidrug resistance to *Salmonella typhi* against antibiotics that are commonly used has brought about the need for new antimicrobial remedy from plant- derived medicines that are probably safer than synthetic ones.^{3,19}

METHODS

Data collection

Primary data were used for collecting data from each respondent by administering *pre-tested, validated and reliable* 53 point structured questionnaire called the Instrument. The questionnaire comprised mainly close ended with a few open ended questions. Secondary data were sourced from journals and other periodicals, reference books, textbooks, internet search, library and monographs.

Design

The project was a *cross sectional* descriptive study. The survey was for four (4) months (19th November, 2013 – 1st March, 2014 = 21 days).

The present study was in Jere LGA, one out of the 27 LGAs in Borno State, Nigeria. It was carved out of Maiduguri Metropolitan Council (MMC) in 1996.²⁰ It occupies a landmass of 160km².²¹ Within the State, it shares boundaries with Mafa LGA to the east, MMC to the north and Konduga to the South.²² The climate of Jere comprises cold and hot seasons and minimum temperature ranging from 15^o-20^oC, while the maximum temperature ranges from 37^o – 45^oC. The rainfall is from 500mm to 700mm per annum²³.

Generally, there is a cool-dry season (October – February), hot season (March-June) and a short rainy (wet) season (June/July – September, October) with relative humidity which is low²⁴. Generally, the topography is low land, plain and the soil is mostly sandy with short grasses and thorny shrubs.^{25,26} There are ten (10) wards in Jere LGA; LGA; this study was carried out in Gomari Airport Ward.

Population/Sample

The population of the registered TMPs in Borno State is not known.²⁷ However, what remains clear according to

the Ministry of Health, is that there is no list of registered TMPs in Borno State bringing all the TMPs together under one umbrella (i.e. there was no sampling frame of TMPs) in the recent past (1-3years) Based on this, a *multistage sampling* was used to select 10 TMPs in the study area i.e. Gomari Airport Ward using random sampling (balloting).

The plants were identified and authenticated by a plant Taxonomist at the Department of Biological Sciences, University of Maiduguri.

The fidelity level (FL) in % was also calculated to compare data from the study area on plants that are often used. It was calculated using the formula:

$$FL \% = \frac{Np}{N} \times 100$$

Where:

FL % = Fidelity level

Np = No. of TMPs that claim the use of a plant for the treatment of typhoid fever (No. of citations of each plant)

N = Total No. of TMPs in the study area.

Source: Adapted from^{28,29}

Data analysis

The information obtained from the questionnaire were analyzed using descriptive statistics such as tables, percentage and frequency distribution tables to evaluate the practice of TMPs in the study area. Correlation was assessed by Pearson Test using SPSS version 16.0 of 2007 for all computations.

RESULTS

Validity and reliability of the instrument (Questionnaire)

The validity of the instrument was high and the reliability according to Pearson correlation coefficient (r) also called Cronbach alpha (α) at the end of the study was found to be 0.896.

Plant species, botanical names and local names

A total of twenty two (22) plants belonging to 18 families, 21 genera and 22 species were identified to be used in the treatment of typhoid fever in the study area (Table 1). Their botanical names, families, parts used, their preparation, dosage and administration are shown in Table 1. The family with the largest number of plant species was Caesalpiniaceae (with 5 species). The remaining 17 families had 1 specie each.

Most of the medications used involved a *mixture* of plants with one treated with only a single plant (Table 2). One TMP used only the dried leaves and bark of *Pilostigma reticulatum*, boiled, cooled then decanted and it was taken and also used as bath.

Fidelity Level (FL)

Cassia occidentalis Linn. (*Caesalpinaceae*) is the specie with the highest FL (40.00%) as shown in Table 3. All the other plants had FL of 10.00% each.

Habitat and status of species

Most of the plants used are trees (41.67 %), followed by shrubs (25.00 %), herbs (16.67 %) under shrub and bushy plant (8.33 % each) [Table 4] spread across Gomari Airport ward in the LGA.

Socioeconomic characteristics/demographic Data of TMPs

The study revealed that most of the TMPs were men (90.00 %) whilst 10.00 % were women (Tables 5).

Sources of information/knowledge

All the TMPs' parents were tradomedical practitioners themselves (100.00 %) as shown in Table 6.

Plant Parts, How Used and Obtained

Leaves are the part of the plants most frequently used (80.00 %), followed by the root (50.00 %), bark (20.00) and whole plant (10.00) as shown in Tables 8.

Treatment of typhoid fever, dosages and treatment evaluation

All the TMPs (100 %) had experience in treating typhoid fever. The medications were mainly taken orally (90.00 %), with 30.00 % being applied as baths on the skin and 20.00 % used through inhalation (Table 8) but some applications were prepared from a mixture of plants or ingredients such as milk, (10.00 %).

The reported adverse effects included urine colouration (40,00 %) and dizziness (20.00%) as shown in Table 8. All the TMPs claimed that evidence of treatment was that headache and fever disappeared whilst 90.00% reported that appetite improved. In addition 100% of them reported a high cure rate of typhoid fever and 70.00% of the patients were well in less than 1 week and the remaining 30.00% fully recovered in one week. Treatment failure only occurred if medication was not taken according to specification and no frequency of relapse was reported.

DISCUSSION

The validity of the instrument was high indicating the appropriateness of interpretation made from the results of the questionnaire, according to the context of the instrument as set out in the objectives of the survey and not merely on superficial examination.³⁰⁻³²

The result of this survey in which 22 plants were identified is comparable to the result obtained when an ethnobotanical survey of medicinal plants used in the treatment of typhoid fever by the Idoma people of Nigeria was carried out where a total of 21 species belonging to 18 plant

families were identified². These species are known plants used as medicine in North East Nigeria³⁴ and all of them were widely used by the TMPs in Gomari Airport Ward in Jere Local Government Area, Borno State.

In this study area, the use of traditional medicine is widely accepted. This is evident from the number of plant species (22 plants) identified as medicinal. Through the plants identified as medicinal plants species are few compared with 96 medicinal plants identified in Enugu State, Nigeria by³⁵; 129 plants in Bolivia by Macia *et al.*(2005) but more compared with 45 medicinal species identified by^{36,37} in Ijesha land, Osun State, Nigeria, 21 plants for antityphoid treatment in Idoma land, Benue State, Nigeria, by²; 27 medicinal plants by Ampitan in Biu LGA, Borno State Nigeria and 22 plant species by³⁸ for diabetes treatment in South Western Region of Nigeria. This result may be because of the location of the LGA in the Sahel Savannah of the country.³⁹ The importance of the identified plants to the local community cannot be over emphasized as they make use of them daily and preferred them to the orthodox medicines.³⁹ The use of complimentary and alternative medicine (CAM) for treating typhoid fever is evident by the plants identified.

The use of herbal medicine for the treatment of typhoid fever is evident by the number of plant species identified. It is one way of balancing body systems and has become part of the cultural life and heritage of the people.^{39,41} Many communities have therefore, since time immemorial, adopted different traditional methods, using plant and animal parts which are locally available to alleviate their health issues^{39,40}. All the plants identified had at least one local name. The vernacular names used by the TMPs were uniform, probably suggesting that these plants are well known as remedies.^{2,41,42}

The possible chemical compositions of the identified plants documented from literature may be responsible for the acclaimed antityphoid fever activities by the TMPs. The phytochemical constituents are secondary metabolites which might draw a link between the modern science and the traditional use of the plant.

Psidium guajava L. (Myrtaceae), *Vitex doniana*, *Veronia amygdalina* (Wild) Darke (Asteraceae) and *Erythrina senegalensis* DC. (Papilionoideae), water leaf extracts have been demonstrated by⁴³ to be effective against *Escherichia coli* and *Salmonella typhi*. This is in conformity with the work of (44) who reported that these extracts if properly enhanced and harnessed could be very useful in healthcare delivery system for treatment of diseases. These plants contained phytochemicals like alkaloids, glycosides and anthraquinones.⁴³

Observation was made by⁴⁵ in the survey of ethnobotany and conservation in Northern Nigeria that some plant species have multiple uses and treated and cured different ailments which included asthma, typhoid, stomach ache, headache, diarrhoea, whitlow, dysentery, anaemia, gonorrhoea, cough, among others. This also applies to the plants in Jere LGA in which part of the plants apart from being used to treat typhoid fever could also treat malaria,, cancer, high blood pressure, clustered headache and migraine. According to⁴⁶, since oral information can never be as accurate as was told to the recipient, a whole library of herbal information were being buried gradually with every person that dies. This resulted in slow pace of development of alternative medicine in Nigeria and in Africa in general.

TMPs used different additives and solvents in preparing their formulations. Some additives for example red potash (Jari kanwa) and potash (Kanwa) are mostly added to make some of the preparations that are taken orally more acceptable^{29,33}. These

can also be, milk, which can be added to decoctions and infusions to reduce the bitterness of the remedies in order to make them easier to drink. Lack of data on the biological roles of these materials like red potash and potash has been noted in the literature²⁹. The plants mentioned in the preparations are evaluated generally by biological methods, but the materials added by the TMPs are generally not screened²⁹.

The potential of a plant to cure a disease can be estimated by its fidelity level (FL),^{28,29} There was a high level of agreement among the TMPs in Gomari Airport Ward, Jere LGA on the plants used in treating typhoid fever. 6 of the plants had high citations and FL of 6 of the plants were high as well. This means that the medicinal properties of these plants can seriously be considered for more ethnopharmacological screening⁴¹, since they are species widely applied by many people and for a long time have been so.

The pattern of traditional prescriptions revealed that majority of the medications involved a mixture of plants with only a few (1 preparation) treated with a high level of documentation. Traditional healers claimed that using multiple plants may provide a synergistic effect in therapeutic efficacy.^{42,48}

Although traditional medicines are still in common use by the TMPs in Borno State, Nigeria and other people in Nigeria, accurate information of the plant and their medicinal properties are held by only a few individuals in the community. These TMPs are almost without exception, community elders of 50 years of age or older, hence there is high probability that these invaluable knowledge and art of healing which have been religiously preserved for generations may not be passed on to the younger generation. To ensure that this information on plants is not lost with the current elderly generation of healers, documentation and preservation of this

indigenous knowledge must be accorded utmost priority in this culture and other cultures, so that future generations can benefit from it in overcoming emerging problems of public health, agricultural and pharmaceutical sectors.⁴²

The result of this study does not agree with that of Ampitan^{39,46,49} where the age group of TMPs were (41-50) years respectively. In the area of study, age bracket ≤ 50 years were few (10.00 %) whilst age bracket & above 50 years were mainly the TMPs. Thus, the age of TMPs may be said to vary from place to place depending on where the survey is carried out. Many of the TMPs.

Majority of the TMPs in the LGA were men (90 %). This observation agrees with the one made by³⁹ who carried out a study of medicinal plants in Biu LGA, Borno State, where the traditional medicine practitioners were males.. The result however disagreed with that made by⁵⁰ in Abeokuta, Ogun State where women were the predominant traditional medicine practitioners. These results might be due to the people's religion which forbid women from meeting or mingling with men either in the community or private.³⁹ However, of note, is that even in the South West of Nigeria, a study carried out in Abeokuta as well, by (38) on treatment of diabetes with plants had 96% male TMPs.

Majority of the TMPs agreed that knowledge of herbal treatment was mainly acquired by training (from their ancestors and parents) and is usually passed down from one generation to another. This ensures that the practice stays within the family. This is in agreement with the working of³⁸ who carried out a survey of the management of diabetes with plants in South Western region of Nigeria that source of information on alternative medicine is mainly from the family (83%).

The plant part used was "traditionally" estimated, so the variations in

the doses would either increase or decrease toxicity or affect the amount of the plant that would probably elicit pharmacological action.⁵¹ Furthermore, lack of exact doses were reported by the TMPs in Jere LGA and the duration were not precisely given. This lack of exact doses in traditional practice has also been documented by many researchers^{2,29,38,39,42,51,52}. The reason being that the healers failed to reveal all their knowledge.

Medicinal plants' use is probably of a lower cost than allopathic pharmaceutical remedies⁵³ and most TMPs do not charge, they only received whatever the patients could offer except for the few who charged some money. In many of the plants studied pharmacologically, compounds were isolated from organic extracts of the plants while TMPs use water extract to cure their patients. The question how these non-volatile substances could be the active constituent in phytomedicines normally administered as water extracts is interesting. One probable explanation might be that the minimum inhibitory concentration (μg range) of these compounds are low, as such they are effective.

Another reason is that in the plant material there could be co-extraction as plants often contain phytochemicals like saponins^{51,5,4}, that could lead to the solubility of and other non-soluble compound if it is in the same mixture. Plants are indispensable source of medicines for humans since creation^{29,55} and constitute major economic resource of most countries on the planet including Nigeria. Most of the herbal medicines came from the trees followed by shrubs, many of which also have other uses such as providing timber and protection of the environment²⁹. They have taxonomic classes which enable their classification with respect to their role in economic development^{29,56}.

The unprecedented interest and demand for plants with medicinal properties and potency for treatment of various

ailments is causing overexploitation of such plant genetic resources in the area of study. According to^{29,57}, the depletion rate of plants generally is high, yet little is known about a large portion of the world's plant species especially tropical floras. When viewed against the present rate of extinction and *decimation* of the forests in this area, there is the need to conserve what is left as forest for posterity.

The most frequent liquid used in preparation is water, powders are sometimes suspended in milk to probably mask their bitter taste.⁶¹

The major method of administration is oral²⁹ followed by baths. Other ways of administration include direct application such as inhalation or bathing. Today, baths are still an important way to treat some illnesses and pains.^{41,58,59}

The reported adverse effects effects when these antityphoid plants are used are dizziness and urine colouration according to the healers headaches, may be due to overdose of the medications or the additives. When the side effect is violent, stopping of the treatment is recommended^{59,62}.

The reported typhoid fever as diagnosed by the TMPs in fact may be symptoms only, which indicate that the traditional practice in Gomari Airport Ward of Jere LGA is symptom-directed as 100 % of the TMPs treated high fever and headache which are symptoms of diseases. This agreed with what was obtained in various regions of Mali⁵¹, since there are a few other means of diagnosis apart from the symptoms observed by the patients^{51,60}.

CONCLUSION

The study provides information that could assist in the quest for locally sourced drug development in the treatment of typhoid fever in Nigeria. Screening and evaluation of the identified plants may be a

next step in developing local therapeutic agents for typhoid fever.

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Table 1. Medicinal plant, name, family, part used and availability of plant in treatment of typhoid fever in Gomari Airport Ward, Jere Local Government

S. No.	Botanical name and family	Part Used	Common name	Vernacular name	Availability of plant
1.	<i>Cassia occidentalis</i> Linn. (Caesalpiniaceae)	Leaves (Fresh) Whole plant (fresh except root)	Negro coffee, stinking weed	Rai daure, majanzafari (Hausa); Rere (Yoruba); Okidiagbara (Igbo)	Jere LGA (Unimaid), MMC
2.	<i>Azadirachta indica</i> A. Juss (Meliaceae)	Leaves (fresh)	Neem tree	Dogo yaro, darbejiya (Hausa); Amuka (Yoruba); Okwuru- ozo (Igbo)	Jere LGA (Unimaid), MMC
3.	<i>Citrus aurantifolia</i> Christm = <i>C. limon</i> (L.) Burm. F. Swing (Rutaceae)	Leaves (fresh)	Orange (Lime)	Lemun tsami (Hausa); Osan wewe (Yoruba); Olome, Oroma nkilisi (Igbo)	Jere LGA (Unimaid) MMC
4.	<i>Sterospermum kuthianum</i> Cham. (Bignoniaceae)	Stem bark (dried)	Nil	Sansami (Hausa)	Mafa LGA
5.	<i>Erythrina senegalensis</i> DC = <i>Chirocalyx latifolia</i> ; <i>Erythrina latifolia</i> (Papilionaceae)	Stem bark (dried)	Coral tree, coral flower	Mirjinya, Faskara giwa (Hausa); Ologunseese (Yoruba); Echichi; echichili (Igbo)	Damboia LGA
6.	<i>Cochlospermum tinctorium</i> A. Rich (Cochlospermaceae)	Root (dried)	Nil	Rawaya (Hausa); Rawaye (Yoruba); Nkalike, Obasi (Igbo)	Konduga LGA
7.	<i>Hygrophilia auriculata</i> (Schumach) Heine (Acanthaceae)	Leaves (fresh)	Talmak-hana	Zazargiwa, Kayar rakumi (Hausa); Zanagodoye (Kanuri)	MMC(Zoo)

S. No.	Botanical name and family	Part Used	Common name	Vernacular name	Availability of plant
8.	<i>Tamarindus indica</i> L. (Caesalpiniaceae)	Leaves (fresh)	Tamarind, Indian nut;	Tsamiya (Hausa); Tamshu (Kanuri); Nbulu (Babur); Icheku oyibo (Igbo); Ajagbon (Yoruba)	Jere (Unimaid), MMC
9.	<i>Asparagus africanus</i> Lam. (Liliaceae)	Whole plant (dried)	Nil	Mugamu adawa (Hausa); Aluki, Kaadan, Koobe (Yoruba)	
10.	<i>Acacia albida</i> Del. (Mimosaceae)	Leaves (fresh or dried)	Nil	Gawo (Hausa); Karau (Kanuri); Kad'ha (Babur)	Jere (Unimaid)
11.	<i>Veronia amygdalina</i> (Wild) Darke (Asteraceae)	Leaves (fresh or dried)	Bitter leaf	Shiwaka (Hausa); Ewuro (Yoruba); Onugbu; Olugbu (Igbo); Kiriologbo (Ijaw) Onugbu (Urhobo)	Jere (Unimaid)
12.	<i>Waltheria americana</i> L. (Sterculiaceae)	Roots (dried)	Nil	Hankufa (Hausa); Korikodi, Opa-emere (Yoruba)	Jere LGA (Unimaid), MMC
13.	<i>Boswellia dalzielli</i> Hutch (Burseraceae)	Roots (dried)	Frankin-cense tree	Ararrabi (Hausa); Kaafidafi, Dikkwar (Kanuri); Debuero (Babur)	Damboa LGA Biu LGA
14.	<i>Cassia singuena</i> Del. (JLG/07) (Caesalpiniaceae)	Roots (fresh)	Nil	Rumfu (Hausa); Fanalewa (Kanuri); Bag'sha (Badur)	MMC
15.	<i>Cordia africana</i> Lam. (Boraginaceae)	Stem bark (fresh)	Nil	Alulluba (Hausa); Alwa (Kanuri); Alwa (Babur)	Yobe State

S. No.	Botanical name and family	Part Used	Common name	Vernacular name	Availability of plant
16.	<i>Maytenus senegalensis</i> (Lam.) Exell. (Celastraceae)	Leaves (fresh)	Nil	Bakororo, namijin tsada (Hausa); Karau karau (Kanuri); Soofi (Babur); Sepolotiu (Yoruba)	MMC, Jere,
17.	<i>Celtis integrifolia</i> Lam. (Ulmaceae)	Leaves (fresh)	Nil	Zuwo (Hausa); Nguzo (Kanuri); Nguzo (Babur)	MMC
18.	<i>Combretum glutinosum</i> Pers. Ex DC (Combretaceae)	Leaves (fresh)	Nil	Kattakara, taranniyi, farin ganya (Hausa); Kadaar (Kanuri); Shafa (Babur)	Jere (Unimaid) MMC
19.	<i>Pilostigma reticulatum</i> (DC) Hochst CAESALPINIACEAE	Root (fresh)	Pilostigma	Kargo, kalgo (Hausa); Kalur (Kanuri); B'ula (Babur); Abafe, Abafin (Yoruba)	Jere (Unimaid), MMC,
20.	<i>Cadaba farinosa</i> Forssk (Capparidaceae)	Leaves (fresh)	Nil	Bagayi (Hausa); Marra (Kanuri); Marka (Babur)	MMC
21.	<i>Gossypium herbaceum</i> L. (Malvaceae)	Leaves (fresh)	Cotton	Auduga (Hauda); Kaitan (Kanuri); Owu (Igbo); Laghosa (Yoruba)	Jere (Unimaid)
22.	<i>Detarium microcarpum</i> Guill ex Perr. (Caesalpinaceae)	Root (fresh)		Taura (Hausa); Ogbogbo, sedun (Yoruba); Ofo (Igbo)	Biu LGA

MMC Maiduguri Metropolitan Council

Unimaid University of Maiduguri

LGA Local Government Area

Number of families = 18

Number of genera = 21

Number of species = 22

Table 2. Medicinal plants recipe, part used, method of preparation, dosage, added substances (adjunct), mode of administration, precaution, side effects, receipts and other uses

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
1.	<i>Cassia occidentalis</i> L.	Leaves (fresh)	Boil the plants together with potash (kanwa), Cool then decant	Take one small cup three times daily for three days, cover the body with the remaining and inhale	Potash (Kanwa)	Decoction	Oral, inhalation	None	None	None
	+									
	<i>Azadirachta indica</i> A. Juss	Leaves (fresh)								
	+									
	<i>Citrus aurantifolia</i> Christm.	Fruit (fresh)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
2.	<i>Sterospermum kuthianum</i> Cham	Stem bark (dried)	Pound the dried plant into powder, boil with red potash (jarikanwa), allow to cool then decant	Take one small cup two or three times daily for five days. Repeat after five days if patient is	Red potash (jarikan-wa)	Decoction	Oral	Do not give on an empty stomach	Dizziness	None

				not cured						
	+									
	<i>Erythrina senegalensis</i>	Stem bark (dried)								
	+									
	<i>Cochlospermum tinctorium</i> A. Rich	Root (dried)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
3.	<i>Cassia occidentalis</i> Linn.	Leaves (Fresh)	Boil the three leaves together, cool, then decant	Take as tea (one small cup) twice daily for three days	None	Decoc-tion	Oral	Do not give on an empty stomach	Urine color-ation and dizzi-ness	None
	+									
	<i>Hygrophilia auriculata</i> (Schumach) Heine	Leaves (fresh)								
	+									
	<i>Tamarindus indica</i> L.	Leaves (fresh)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
4.	<i>Asparagus africanus</i> Lam.	Whole plant (dried)	Pound the dried shrub into powder	Take one small spoon full two times daily with milk for three days	None	Powder	Oral	None	None	None
5.	<i>Detarium microcarpum</i> et. Perr. Guill +	Root (fresh or dried)	Boil the three plants together after pounding	bath with it twice daily for five days, also inhale the steam twice daily for five days	None	Baths	Skin, inhalation	None	None	Malaria
	<i>Acacia albida</i> Del. +	Leaves (fresh or dried)								
	<i>Veronia amygdalina</i> (Wild) Darke	Leaves (fresh or dried)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
6a.	<i>Pilostigma reticulatum</i> (DC) Hochst	Leaves & bark (dried)	Boil the dried leaves and bark together in water, cool then decant	Take one small cup twice daily, also bath with it for three days	None	Baths, decoction	Skin, oral	None	None	Malaria

6b.	<i>Waltheria americana</i> L. +	Roots (dried)	Boil the two roots together with red potash (jarikanwa), cool then decant	Drink one cup three times daily for seven days	Red potash (jarikanwa)	Decoction	Oral	None	Urine coloration	Malaria
	<i>Boswellia dalzielli</i>	Roots (dried)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
7.	<i>Cassia occidentalis</i> Linn. +	Leaves (Fresh)	Boil the two plants together after cutting into pieces with red potash (jarikanwa), cool then decant	Drink one small cup three times daily for one week	Red potash (jarikanwa)	Decoction	Oral	None	None	None
	<i>Cassia singuena</i> Del.	Roots (fresh)								
8	<i>Maytenus senegalensis</i> (Lam.) Exell. +	Leaves (fresh)	Boil the two plants together the red potash (Jari kanwa)	Take one small three times daily after eating for three days	Red potash (jarikanwa)	Decoction	Oral	Not to be taken on an empty stomach	Urine coloration	High blood pressure
	<i>Cordia africana</i> Lam.	Stem bark (fresh)								

S. No.	Medicinal plant recipe	Part used	Method of preparation	Dosage	Added substance (adjunct)	Receipt of recipe	Mode of administration	Precaution	Side effect	Other uses
9.	<i>Celtis integrifolia</i> Lam +	Leaves (fresh)	Boil the three plants together, cool, then decant	Drink one small cup two times daily, also bath with it twice daily for one week	None	Baths, Decoction	Oral, skin	None	None	Clustered head ache and migraine
	<i>Combretum glutinosum</i> Pers. Ex DC +	Leaves (fresh)								
	<i>Pilostigma reticulatum</i> (DC) Hochst	Root (fresh)								
10.	<i>Cadaba farinosa</i> Forssk +	Leaves (fresh)	Boil the two plants together in a bottle of cocacola water with red potash (jarikanwa)	Drink all the content daily for three days	red potash (jarikanwa)	Decoction	Oral	None	Urine coloration	Cancer
	<i>Gossypium herbaceum</i> L.	Leaves (fresh)								

KEY: One big spoonful = 15 ml; One small cup = 30-40 ml; One cocacola bottle =75 ml; One sachet of water = 500 ml.

Table 3. Fidelity level (FL) among TMPs in Gomari Airport Ward, Jere LGA on the most reported plants used in the treatment of typhoid fever

S. No.	Plant used	Family	Fidelity level (FL) %
1.	<i>Cassia singuena</i> Del.	CAESALPINACEAE	10.00
2.	<i>Cassia occidentalis</i> Linn.	CAESALPINACEAE	40.00
3.	<i>Tamarindus indica</i> L.	CAESALPINACEAE	10.00
4.	<i>Sterospermum kuthianum</i> Cham.	BIGNONIACEAE	10.00
5.	<i>Asparagus africanus</i> Lam.	LILIACEAE	10.00
6.	<i>Citrus aurantifolia</i> Christm.	RUTACEAE	10.00

$$FL \% = \frac{N_p}{N} \times 100$$

where: N_p = No. of TMPs that claim the use of a plant for the treatment of typhoid fever (No. of citations).

N = Total No. of TMPs in the study area (10).

[Source: Adapted from (28); (29)]

FL is done to compare data from the study area on plants that are often used.

Table 4. Habitat of the medicinal plants used in the treatment of typhoid fever in Gomari Airport Ward, Jere Local Government Area

S. No.	Growth Habitat	Number	Percentage (%)
1.	Grass	-	-
2.	Tree	5	41.67
3.	Aquatic plant	-	-
4.	Bushy plant	1	8.33
5.	Parasite	-	-
6.	Weed	-	-
7.	Shrub or small tree	3	25.00
8.	Climber or liana	-	-
9.	Herb	2	16.67
10.	Thickets	-	-
11.	Shrubby weed	-	-
12.	Under shrub	1	8.33
	Total	12	100.00

Table 5. Biodata of respondents or (Demographic Data of TMPs)

S. No.	Variables		Frequency	Percentage (%)
1.	Sex:	Male	09	90.00
		Female	01	10.00
2.	Age in year	≤ 50	01	10.00
		51-60	02	20.00
		61-70	03	30.00
		71-80	02	20.00
		> 81	02	20.00
3.	Tribe	Kanuri	03	30.00
		Fulani	03	30.00
		Hausa	01	10.00
		Bura	01	10.00
		Marghi	00	00.00
		Shuwa	00	00.00
		Others	02	20.00
4.	Religion	Islam	10	100.00
		Christianity	00	0.00
		Traditional	00	0.00
		Others	00	0.00
5.	Nationality	Nigerian	10	100.00
		Others	00	0.00
6.	Educational qualification	No formal education	00	0.00
		Quaranic education	08	80.00
		Primary education	00	0.00
		Secondary education	02	20.00
		Higher education	00	0.00
7.	Duration of practice of TMP	0-10yrs	00	0.00
		11-20yrs	02	20.00
		21-30yrs	01	10.00
		31-40yrs	02	20.00
		41-50yrs	02	20.00
		51yrs and above	03	30.00
8.	Years of experience in treating typhoid fever	≤ 10 years	00	0.00
		11-15yrs	01	10.00
		Above 15yrs	09	90.00

Key:

n = Total No. of TMPs = 10

TMP = Trado-medical practitioner

Table 6. Sources of information/knowledge on typhoid fever

S. No.	Statement		Yes	
			f	%
1.	My parents are TMP		10	100.00
2.	Those being taught the skill by me	My children	06	60.00
		Other family members	02	20.00
		Apprentices	06	60.00
		No one	02	20.00
3.	The practice is my major occupation		10	100.00
4.	I am involved in another occupation		03	30.00
5.	I am also involved in	Hunting	03	30.00
		Farming	00	0.00
		Trading	00	0.00
		Civil service	00	0.00
		Others	00	0.00
		Nothing	07	70.00
6.	"Bayama" or "koriya" is Hausa name for typhoid fever		0	0.00
7.	"Barjon" is Fulani name for typhoid fever		0	0.00
8.	I can differentiate typhoid fever from	Malaria	10	100.0
		Pneumonia	10	100.00
		Other diseases not mentioned above	10	100.00
9.	I have a herbal preparation to treat typhoid fever	Yes	10	100.00
10.	Area of collection of the plants	Jere LGA	07	70.00
		MMC	06	60.00
		Damboia LGA	02	20.00
		Konduga LGA	01	10.00
		Other areas not earlier mentioned	06	60.00

S. No.	Statement		Yes	
			f	%
11.	Incantation (divinations said before collecting the plant)		0	0.00
12.	Special season or month for collecting the plants		0	0.00
13.	Time of the day for collecting plant	Morning	0	0.00
		Afternoon	0	0.00
		Evening	0	0.00
		Night	0	0.00
		Anytime	10	100.00
14.	I have specimen of the plant		10	100.00
15.	I have told someone about the plant		10	100.00
16.	I learnt treatment of typhoid fever from	My ancestors	05	50.00
		My parents	04	40.00
		My peers	01	10.00
		Others not mentioned	0	0.00
17.	I learnt treatment of typhoid fever through self discovery		0	0.00

Key:

n = No of respondents (TMPs) = 10

TMP = Trado-medical practitioner

f = frequency

% = percentage

MMC = Maiduguri metropolitan council

Table 7. Treatment of Typhoid fever in Gomari Airport Ward

S. No.	Statement	Yes		
		f	%	
1.	Experience got in treating typhoid fever	10	100.00	
2.	Plant parts used	Root	05	50.00
		Stem	01	10.00
		Bark	02	20.00
		Leaves	08	80.00
		Whole plant	01	10.00
3.	How plant parts are used	Fresh	06	60.00
		Dried (under shade)	02	20.00
		Fresh & dried	02	20.00
4.	Adjuncts added	Red potash (Jarikanwa)	05	50.00
		Potash (kanwa)	02	20.00
		None	04	40.00
5.	Method of preparation of medication	Boil, cool, then decant	09	90.00
		Add cold water to the plant and decant	01	10.00
6.	Route of administration	Drinking (oral)	09	90.00
		Bathing (skin)	03	30.00
		Steam inhalation (nostrils)	02	20.00
7.	Quantity of medication administered	One small cup	08	80.00
		One small spoon	00	0.00
		One bucket full	03	30.00
		One big spoon	00	0.00
		One cocacola bottle	01	10.00
8.	Number of times medication is administered	Once daily	01	10.00
		Twice daily	06	60.00
		Three times daily	05	50.00
9.	No. of days medication is administered for	One day	0	0.00
		Two days	0	0.00
		Three days	06	60.00
		Four days	0	0.00
		Five days	02	20.00
		Six days	0	0.00
		Seven days	03	30.00
10.	Duration of treatment	Less than one week	08	80.00
		One week	03	30.00
		Two weeks	0	0.00
		Three weeks	0	0.00
		Four weeks	0	0.00
11.	Powdered medication is taken with the following	Milk	01	10.00
		Nothing	09	90.00

S. No.	Statement		Yes	
			f	%
12.	Precaution taken	Not given on an empty stomach	03	30.00
		No precaution taken	07	70.00
13.	Method of treatment	Herbal alone	10	100.00
		Herbal and divination	0	0.00
		Herbal and diet	0	0.00
		Divination (incantation) alone	0	0.00
14.	Basis of treating typhoid fever on diagnosis	High fever	10	100.00
		Abdominal pain	0	0.00
		Headache	10	100.00
		Nausea and vomiting	0	0.00
		Diarrhoea	0	0.00
15.	Receipts of plants used	Loss of appetite	10	100.00
		Decoction	07	70.00
		Tincture	0	0.00
		Infusion	0	0.00
		Baths	03	30.00
16.	Other conditions that could be treated with the medication	Others	01	10.00
		Malaria	02	20.00
		High blood pressure	01	10.00
		Cancer	01	10.00
		Clustered headache and migraine	01	10.00
		None	05	50.00
17.	Treatment is taken in isolation		10	100.00
18.	Cost of treatment	No charge at all	0	0.00
		No charges only appreciation	09	90.00
		*Charges	01	10.00

Key:

n = No of respondents (TMPs) = 10

TMP = Trado-medical practitioners

f = frequency

% = percentage

*N10,000.00

Table 8. Evaluation of treatment of typhoid fever

S. No.	Statement	Yes		
		f	%	
1.	Side effects	Urine colouration	04	40.00
		Dizziness	02	20.00
		Skin rashes	00	0.00
		Sedation	00	0.00
		Frequent urination	00	0.00
		Profuse sweating	00	0.00
		None	05	50.00
2.	Effect of herbs on patients	Fever disappears	10	100.00
		Headache disappears	10	100.00
		Appetite improves	09	90.00
3.	Patient is cured		10	100.00
4.	Success rate	High	10	100.00
		Average	0	0.00
		Low	0	0.00
5.	Time it takes patient to be well	Less than one week	07	70.00
		One week	03	30.00
6.	Treatment failure occurs if medication is not taken according to specification		10	100.00
7.	Frequency of relapse	Often	0	0.00
		Long	0	0.00
		None	10	100.00

Key:

n = No of respondents (TMPs) = 10

f = frequency

% = percentage

QUESTIONNAIRE

Date of interview.....

Serial Number.....

Name of Interviewer.....

Time Interview Started.....

Time Interview Ended.....

SECTION A: BIODATA OF RESPONDENTS

1. Name of respondent (TMP).....
2. Sex: Male [] Female []
3. Age (completed years)
 - i. 20 – 30 years []
 - ii. 31 – 40 years []
 - iii. 41 – 50 years []
 - iv. 51 – 60 years []
 - v. 61 – 70 years []
 - vi. 71 – 80 years []
 - vii. > 81 years []
4. Tribe:
 - i. Kanuri []
 - ii. Fulani []
 - iii. Hausa []
 - iv. Bura []
 - v. Marghi []
 - vi. Shuwa []
 - vii. Others []
5. Religion:
 - i. Islam []
 - ii. Christianity []
 - iii. Traditional []
 - iv. Others []
6. Ward:
 - i. Zajiri []
 - ii. Mashamari []
 - iii. Gomari Airport []
 - iv. Bulabulin Ngaranmaro []
 - v. Mairi []
 - vi. Ngomari Gana []
 - vii. Maiduguri []
 - viii. Maisandari I []
 - ix. Dala Galtimari []
 - x. Dala Lawanti []
 - xi. Others not in Jere []
7. Nationality:
 - i. Nigerian []
 - ii. Others []
8. What is your highest educational qualification?

- i. No formal education []
- ii. Qur’anic education []
- iii. Primary school []
- iv. Secondary school []
- v. Higher education []
- 9. Duration of practice as TMP**
- i. 0 – 10 years []
- ii. 11 – 20 years []
- iii. 21 – 30 years []
- iv. 31 – 40 years []
- v. 41 – 50years []
- vi. 51 years and above []
- 10. Years of experience in treating typhoid fever**
- i. < 5 years [] ii. 5 – 10 years [] iii. 11 – 15 years []
- iv. Above 15 years []

SECTION B: SOURCES OF INFORMATION/KNOWLEDGE

- 11. Are your parents TMP?** Yes [] No []
- 12. Who are you teaching these skills?**
- i. My children Yes [] No []
- ii. Other family members Yes [] No []
- iii. Apprentices Yes [] No []
- iv. No one Yes [] No []
- 13. Is this practice your major occupation?** Yes [] No []
- 14. Are you involved in any occupation?** Yes [] No []
- 15. I am also involved in**
- i. Hunting [] ii. Farming [] iii. Trading []
- iv. Civil service [] v. Others []
- v. Nothing []
- 16. Typhoid fever in Hausa language is called “bayama” or “koriya”**
Yes [] No []
- 17. Typhoid fever in Fulani language is called “barjon”**

- Yes [] No []
18. I can differentiate typhoid fever from
- i. Malaria Yes [] No []
- ii. Pneumonia Yes [] No []
- iii. Other diseases not mentioned above Yes [] No []
19. Do you have a herbal preparation to treat typhoid fever?
- Yes [] No []
20. I collect the plants to treat typhoid fever from:
- i. Jere Local Government Area Yes [] No []
- ii. Maiduguri Metropolis Yes [] No []
- iii. Damboa Local Government Area Yes [] No []
- iv. Konduga Local Government Area Yes [] No []
- v. I collect the plants to treat typhoid fever from other areas not earlier mentioned
Yes [] No []
21. Any incantation (divination) said before collecting the plants?
- Yes [] No []
22. Do you have any specific season or month for collecting the plants?
- Yes [] No []
23. What time of the day do you collect the plants?
- i. Morning Yes [] No []
- ii. Afternoon Yes [] No []
- iii. Evening Yes [] No []
- iv. Night Yes [] No []
- v. Any time Yes [] No []
24. Do you have any specimen of the plant?
- Yes [] No []
25. Have you ever told anyone about this?
- Yes [] No []
26. I learnt treatment of typhoid fever from:
- i. My ancestors Yes [] No []
- ii. My parents Yes [] No []
- iii. My peers Yes [] No []
- iv. Others not mentioned Yes [] No []
27. I learnt treatment of typhoid fever through self discovery

Yes [] No []

SECTION C: TREATMENT

28. Any experience in treating typhoid fever?

Yes [] No []

29. What are the plants' parts used?

i. Root Yes [] No []

ii. Stem Yes [] No []

iii. Bark Yes [] No []

iv. Leaves Yes [] No []

v. Fruits Yes [] No []

vi. Whole plant Yes [] No []

vii. Flowers Yes [] No []

viii. Stalk Yes [] No []

30. Indicate below the plants you use for treating typhoid fever

S/No.	Vernacular Name		Plants' Parts Used	Receipts	Availability of Components
	Hausa Name	Other Names			
1					

31. How are the plants used?

i. Fresh Yes [] No []

ii. Dried(under shade) Yes [] No []

iii. Fresh & dried Yes [] No []

iv. Powdered Yes [] No []

v. Others Yes [] No []

32. You can also add the following materials into the herbs to treat typhoid fever (adjuncts)

- i. Red potash (Jarikanwa) Yes [] No []
- ii. Potash (kanwa) Yes [] No []
- iii. Powdered potash (guwurno) Yes [] No []
- iv. Others Yes [] No []
- v. None Yes [] No []
- 33.** How do you prepare the medication (method of preparation)?
- i. I boil, cool, then decant Yes [] No []
- ii. I add hot water to the plant and decant Yes [] No []
- iii. I add cold water to the plant Yes [] No []
- iv. I use other methods Yes [] No []
- 34.** Route of administration
- i. Drinking (oral) Yes [] No []
- ii. Bathing (skin) Yes [] No []
- iii. Steam inhalation (nostrils) [] No []
- 35.** What quantity of medication do you administer?
- i. One small cup Yes [] No []
- ii. One small spoon Yes [] No []
- iii. One bucket full Yes [] No []
- iv. One big spoon Yes [] No []
- v. One cocacola bottle Yes [] No []
- 36.** How many times do you administer the medication?
- i. Once daily Yes [] No []
- ii. Two times daily Yes [] No []
- iii. Three times daily Yes [] No []
- iv. Four times daily Yes [] No []
- 37.** How many days do you administer the medication?
- i. One day Yes [] No []
- ii. Two days Yes [] No []
- iii. Three days Yes [] No []
- iv. Four days Yes [] No []
- v. Five days Yes [] No []
- vi. Six days Yes [] No []

- vii. Seven days Yes [] No []
- 38.** How many weeks does it take you to treat typhoid fever?
- i. Less than one week Yes [] No []
- ii. One week Yes [] No []
- iii. Two weeks Yes [] No []
- iv. Three weeks Yes [] No []
- v. Four weeks Yes [] No []
- 39.** Powdered medication is taken with the following:
- i. Milk Yes [] No []
- ii. Honey Yes [] No []
- iii. Porridge Yes [] No []
- iv. "Kunu" Yes [] No []
- v. Tea without milk Yes [] No []
- vi. Only water Yes [] No []
- vii. Soft drink Yes [] No []
- viii. Others Yes [] No []
- ix. Nothing Yes [] No []
- 40.** What precautions do you take during the treatment?
- i. Not given to children less than one
year Yes [] No []
- ii. Not given to pregnant women Yes [] No []
- iii. Not given to the elderly who are 60 years and above
Yes [] No []
- iv. Not given on an empty stomach Yes [] No []
- v. No precaution taken Yes [] No []
- 41.** What method of treatment do you use?
- i. Herbal alone Yes [] No []
- ii. Herbal and divination Yes [] No []
- iii. Herbal and diet Yes [] No []
- iv. Divination (incantation) alone Yes [] No []
- 42.** Typhoid fever can cause

- | | | | | | | | |
|------------|--|-----|---|---|----|---|---|
| i. | High fever | Yes | [|] | No | [|] |
| ii. | Abdominal pain | Yes | [|] | No | [|] |
| iii. | Headache | Yes | [|] | No | [|] |
| iv. | Nausea and vomiting | Yes | [|] | No | [|] |
| v. | Diarrhoea | Yes | [|] | No | [|] |
| vi. | Loss of appetite | Yes | [|] | No | [|] |
| vii. | Other symptoms | Yes | [|] | No | [|] |
| 43. | Receipts of plant used could be | | | | | | |
| i. | Decoction | Yes | [|] | No | [|] |
| ii. | Tincture | Yes | [|] | No | [|] |
| iii. | Infusion | Yes | [|] | No | [|] |
| iv. | Baths | Yes | [|] | No | [|] |
| v. | Others | Yes | [|] | No | [|] |
| 44. | Other conditions that could be treated with this medication are? | | | | | | |
| i. | Malaria | Yes | [|] | No | [|] |
| ii. | Asthma | Yes | [|] | No | [|] |
| iii. | Diabetes | Yes | [|] | No | [|] |
| iv. | Bilharzia | Yes | [|] | No | [|] |
| v. | High blood pressure | Yes | [|] | No | [|] |
| vi. | Cancer | Yes | [|] | No | [|] |
| vii. | Snake bite | Yes | [|] | No | [|] |
| viii. | Jaundice | Yes | [|] | No | [|] |
| ix. | Bad dreams | Yes | [|] | No | [|] |
| x. | Clustered headache and migraine | Yes | [|] | No | [|] |
| xi. | Psychiatric case | Yes | [|] | No | [|] |
| xii. | Ulcer | Yes | [|] | No | [|] |
| xiii. | Yellow fever | Yes | [|] | No | [|] |
| xiv. | Kidney problem | Yes | [|] | No | [|] |
| xv. | Eye problem | Yes | [|] | No | [|] |
| xvi. | Chest pain | Yes | [|] | No | [|] |
| xvii. | Anaemia | Yes | [|] | No | [|] |
| xviii. | Snake bite | Yes | [|] | No | [|] |

- xix. Skin infection Yes [] No []
- xx. Piles Yes [] No []
- xxi. None of these Yes [] No []

45. Is treatment taken in isolation or in combination with other treatments like herbal solution or hospital solution? Yes [] No []

46. How much do charge for treatment?

- i. No charges at all Yes [] No []
- ii. No charges only appreciation Yes [] No []
- iii. ₦2,000.00 Yes [] No []
- iv. ₦3,000.00 Yes [] No []
- v. ₦5,000.00 Yes [] No []
- vi. ₦7,000.00 Yes [] No []
- vii. ₦10,000.00 Yes [] No []
- viii. ₦13,000.00 Yes [] No []
- ix. ₦20,000.00 Yes [] No []
- x. ₦50,000.00 Yes [] No []

SECTION D: EVALUATION OF TREATMENT

47. Have you ever observed any side effect like

- i. Urine colouration Yes [] No []
- ii. Dizziness Yes [] No []
- iii. Skin rashes Yes [] No []
- iv. Sedation Yes [] No []
- v. Frequent urination Yes [] No []
- vi. Profuse sweating Yes [] No []
- vii. None Yes [] No []

48. The effect of herbs on patients and evidence of success is that

- i. Fever disappears Yes [] No []
- ii. Nausea/vomiting stops Yes [] No []
- iii. Headache disappears Yes [] No []
- iv. Diarrhoea stops Yes [] No []
- v. Appetite improves Yes [] No []

