

Ethnobotanical Survey of Plants in Folklore Medicine of Selected Communities of Yobe State, North-East Nigeria

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ABSTRACT

Since time immemorial, traditional medicines especially medicinal plants have remained the mainstay of managing various ailments in underdeveloped and developing nations globally. Despite the availability of orthodox medicines, communities in low income countries rely largely on herbal preparations to manage and cure diseases. In this study, an ethnobotanical survey was conducted with a view to compile and document traditional medicinal plants and practices of six communities, i.e. three (3) from each of two Local Government Areas of Yobe State, Nigeria. Semi structured questionnaires aided by guided interviews were used to obtain information regarding traditional knowledge from 120 traditional herbalists, their attendants and community members. Results revealed that more males 80 (67%) than females 40 (33%) practice traditional medicines in general terms, with the majority of the respondents 36 (30%) falling in the age range of 51-60 years. Specifically, 28 (23.33%) traditional herbalists were observed to specialize in the treatment of fever and fever-related illnesses. A total of 60 medicinal plants belonging to 28 botanical families were identified and their medicinal values recorded. Out of the 28 botanical families recorded, Fabaceae was the most common family with nine (9) species of medicinal plants followed by Asteraceae and Moraceae families, with four (4) representative medicinal plant species each. Similarly, leaves are the most common parts used followed by stem bark and roots/root bark respectively. There is a need to scientifically validate the traditional claim for the use of medicinal plants reported in the treatment of management of disease conditions.

Keywords: Ethnomedicine, medicinal plants, Yobe State

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Introduction

Ethnomedicinal practice has been the cornerstone of primary health care system in many African countries¹. Plants, minerals and animals constitute the major natural resource ever used for preventative, curative and rehabilitative health by traditional healthcare practitioners in Africa^{2,3}. Also known as native or folk medicine, traditional medicine comprises a medical knowledge system that has developed over generations within various societies before the era of modern medicine⁴. In the recent years, treatment and remedies used in traditional medicine have gained more attention from researchers in contemporary science in many parts of the world⁵. Since time immemorial, traditional medicines have been practiced in many parts of the world. Notably, Traditional Chinese Medicine (TCM)^{3,4,6}, Ayurveda⁷⁻⁹, Unani^{10,11}, Kambo¹², Aboriginal medicines^{13,14} as well as the African Traditional Medicine (ATM)¹⁵ can be mentioned. In Nigeria for example, medicinal plants proven to be effective in the management of a number of ailments have been reported in the literature^{2,5,16-19}. Some believe that poor and illiterate individuals are the most patronisers of traditional medicine in many parts of the world, whose population is constantly increasing by the day. These people live in rural settings and suffer from preventable or diseases associated with malnutrition²⁰. Practitioners of traditional medicine were seen, especially by medical doctors who acquired western education, as a threat to the wellbeing of patients.

Despite all this, developing African countries have begun to integrate ATM into the continent's national health care system, with a bid to identify, collect, and isolate active compounds of medicinal

substances, and of course preserve traditional knowledge²¹. In Nigeria, the Nigeria Natural Medicines Development Agency (NNMDA) and the National Institute for Pharmaceutical Research and Development (NIPRD) are saddled with these responsibilities²⁰. While many studies have documented medicinal plants used in the management of many diseases in Nigeria, little is known about the ethnobotany of Yobe State. However, a handful of plants used by some tribes to treat ailments in some parts of Yobe State are reported in the literature²². The specific objective of this research is to identify, compile and document medicinal plants of some selected communities in Nangere and Potiskum Local Government Areas (LGAs) of Yobe State.

Methodology

Study Area

Yobe State is one of the 36 states in Nigeria. The state lies in the North-eastern region of Nigeria, occupying a land mass of 47,153 square kilometers and a population of 2,757,322 people spread across 17 LGAs [National Population Commission²³]. Yobe is ranked 6th out of the 36 states of Nigeria in terms of size [Yobe State Ministry of Health²⁴]. The state is characterized by semi-arid savannah vegetation with considerable long period of hot season (maximum average temperature of 38 °C to 42 °C) and evident desertification, which makes most parts of the State sandy during the dry season and muddy in the rainy season as a result of which, the terrain is mostly difficult and communities classified as "hard to reach"²⁴. In Potiskum LGA, Kare-Kare, Ngizim, Hausa-Fulani and Bole are the most widely spoken and indigenous ethnic groups, while Kare-Kare, Fulani and Hausa are widely spoken in Nangere LGA. Most inhabitant of these LGAs are peasant farmers and Civil servants²⁵.

Study sites

This research was conducted in Nangere and Potiskum Local Government Areas (LGAs) of Yobe State. Potiskum LGA is situated on latitude 11.7° and Longitude 11.07° , with an area of 559 square kilometers (216 square) and a population of 205,876 comprising 105,388 males and 99,478 females²³. Nangere LGA on the other hand is situated on $11^{\circ} 5' 50''$ N, $11^{\circ} 04''$ E, and has an area of 980 km² and a population of 87,823²³ (Figure 1).

Target population

Three communities from each of the two LGAs were selected for this study. These

communities were selected on the basis of their ancient histories, proximity to main city centers and population. Twenty (20) traditional herbalists from each community with a total of one hundred and twenty (120) were randomly selected.

Ethnobotanical Survey

Ethnobotanical survey was conducted between the months of February and March, 2020. Prior to data collection, several visits were made to traditional herbalists to familiarize them with the research team, build their confidence in the project and obtain their consent to participate in the research. An interview built on trust with a common aspiration to conserve the indigenous knowledge of traditional medicinal practice and

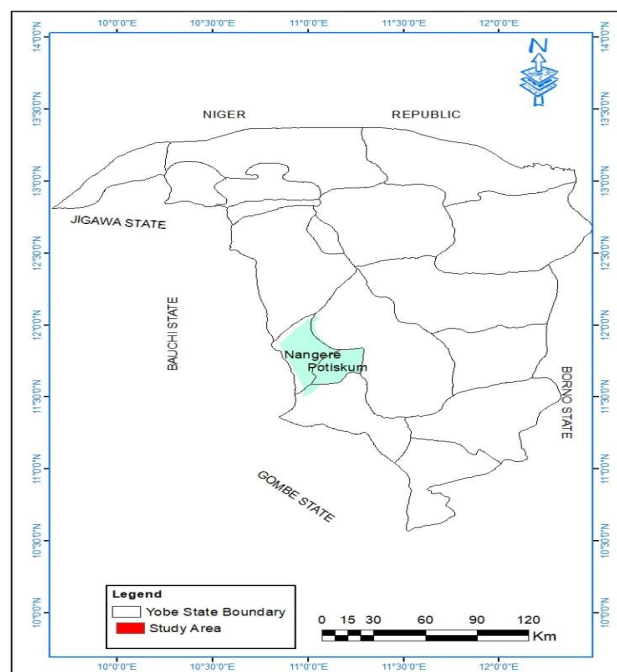


Figure 1. Map of Yobe State indicating study sites

improve health-care conditions in Nigeria and by extension, Yobe State was equally conducted.

Prior informed consent and permission to interview the traditional herbalist was obtained from community leaders and each participant verbally. The survey was guided by a semi-structured questionnaire, with sociodemographic information obtained from the herbalists, their attendants and other members of the community as well as what they thought of diseases and their preference/ specialization in certain ailments². The herbalists were interviewed on plant use, treated diseases, method of collection and preservation, mode of administration and any precautions necessary to be followed during the period of

medication.

Collection and Identification of medicinal plants

Medicinal plants were identified during the survey by their local names with the help of traditional herbalists. Plant samples were collected and further identified and classified according to taxonomic keys^[26] by a plant taxonomist in the Department of Biological Sciences, Yobe State University, Damaturu, Nigeria.

Data analysis

Data obtained was subjected to descriptive statistics, and results were presented in simple percentage.

Table 1. Socio-demographic status of respondents		
Variables	Frequency	Percentage (%)
Gender		
Male	80	67
Female	40	33
Age (Years)		
20-30	17	14.17
31-40	31	25.83
41-50	33	27.5
51-60	36	30
> 60	3	2.5
Educational Level		
None	25	20.83
Basic Education	32	26.67
Secondary	34	28.33
Tertiary	29	24.17
Specialization		
Cancer	14	11.67
Fever & related illnesses	28	23.33
Piles	23	19.17
Diabetes	17	14.17
Evil Spirits	15	12.5
Gastric Ulcer	13	10.83
Hepatitis	10	8.33

Table 2. Medicinal plants identified from selected communities during ethnobotanical survey

Family	Botanical Name	English Name	Local/Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Anacardiaceae	<i>Anacardium occidentale</i> L.	Cashew	Kashu	Stem bark, leaves	c	Jaundice, Typhoid fever and Malaria	Decoction	Orally
Anacardiaceae	<i>Mangifera indica</i> L.	Mango	Māngwārō	Stem bark, leaves	c	Jaundice, malaria	Decoction	Orally
Anacardiaceae	<i>Mangifera indica</i> L.	Mango	Māngwārō	Stem bark	c	Hepatitis	Decoction	Orally
Anacardiaceae	<i>Lannea acida</i> A. Rich.		Fāññù	Stem bark	w	Anal leprosy	Decoction	Orally
Annonaceae	<i>Xylopia aethiopica</i> A. Rich	Guinea pepper	Kimbáá	Fruit	w	Rheumatism, Fever and itching	Decoction	Orally
Annonaceae	<i>Annona senegalensis</i> Pers.	Wild custard apple	Gwāndān dāájiti or Gwāndāf jéjéj	Root bark	w	Cancer	Powder	Orally
Aristolochiaceae	<i>Aristolochia indica</i> L.		Gādākūkā	Root bark	w	Common cold	Ointment	Topically
Aristolochiaceae	<i>Aristolochia indica</i> L.		Gādākūkā	Root bark		Piles	Ointment	Topically
Aristolochiaceae	<i>Aristolochia albidula</i> Duch.		Dūmán dtiúsèè	Stem bark	w	Fracture	Ointment	Topically
Aristolochiaceae	<i>Aristolochia albidula</i> Duch.		Dūmán dtiúsèè	Stem bark	w	Hernia	Direct	Orally
Asclepiadaceae	<i>Leptadenia hastata</i> (Pers.) Deene.		Yāadiyáá	Fresh leaves and stem	w	Jaundice (Class 2) Associated with swelling of whole body (oedema) due to excessive fluid accumulation into tissues	Maceration	Orally

Table 2. Continue

Family	Botanical Name	English Name	Local /Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Asteraceae	<i>Artemisia absinthium</i> L.		Tázárgádé	Whole plant	w	Malaria, stomachache	Decoction	Orally
Asteraceae	<i>Centaurea perrotterti</i> DC.	Thistle	Dáyíí	Whole plant	w	Partial blindness and fever	Decoction	Orally
Asteraceae	<i>Vernonia amygdalina</i> Del.	Bitter leaf	Shiwáákáá	Leaves	c	Jaundice, malaria, hypertension	Maceration	Orally
Asteraceae	<i>Vernonia kotschyana</i> Sch. Bip. ex Walp.		Dáumáshíí	Root bark	w	Diabetes	Decoction	Orally
Asteraceae	<i>Vernonia kotschyana</i> Sch. Bip. ex Walp.		Dáumáshíí	Root bark	w	Heartburn	Decoction	Chew boiled root (orally)
Balanophoraceae	<i>Thonningii sanguinea</i> Vahl.		Kúlláá	Fruit	w	Oedema	Ointment	Topically
Bombacaeae	<i>Adansonia digitata</i> L.		Kuka	Stem bark	w	Paralysis	Decoction	Orally
Burseraceae	<i>Commiphora kerstingii</i> Engl.		Ááírábíí	Stem bark	w	Piles	Decoction or maceration	Orally
Caricaceae	<i>Carica papaya</i> L.	Paw-paw	Gwándá	Leaves	c	Malaria	Decoction	Orally
Caricaceae	<i>Carica papaya</i> L.	Paw-paw	Gwándá	Leaves	c	Piles	Decoction	Sitz bath
Cochlospermaceae	<i>Cochlospermum tinctorium</i> A. Rich.		Bálgéé or Ráawáyá	Root	w	Jaundice (Class 1) Associated with yellowing of eyes and abdominal swelling	Direct	Orally

Table 2. Continue

Family	Botanical Name	English Name	Local/Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Cochlospermaceae	<i>Cochlospermum Planchonii</i> (Hook. Et. X. Planch)		Bálgéé or Rááwáyà	Root	w	Jaundice (Class 1) Associated with yellowing of eyes and abdominal swelling	Direct	Orally
Combretaceae	<i>Gutera senegalensis</i> (J.F. Gme)		Sabara	Leaves	w	Skin rash	Direct	Topically
Combretaceae	<i>Gutera senegalensis</i> (J.F. Gme)		Sabara	Leaves	w	Diarrhoea	Macerate and filter	Orally
Combretaceae	<i>Anogeissus tetocarpus</i> (DC.) Guill. & Perr.	Chewsitck tree	Gàngámáú or Mákéé	Stem bark	w	Jaundice (Class 1) Associated with yellowing of eyes and abdominal swelling	Direct	Orally
Combretaceae	<i>Terminalia spp. L.</i>	Almond	Báushè	Root bark	w	Diarrhea	Decoction	Orally
Commebinaeae	<i>Oxystelma bornouense</i> R. Br.	Sheep intestines	Hánjin ráágóó	Whole plant	w	Burns, oedema	Decoction	Orally
Cucurbitaceae	<i>Citrullus colocynthis</i> L.	Bitter cucumber	Guna	Fruit	c	Chicken pox	Maceration	Orally
Cucurbitaceae	<i>Cucurbita pepo</i> L.	Pumpkin	Kábééwàà	Leaves	c	Anaemia	Pulp	Orally
Cucurbitaceae	<i>Cucurbita maxima</i> Duchesne	Pumpkin	Kábééwàà	Leaves	c	Anaemia	Pulp	Orally
Cucurbitaceae	<i>Momordica balsamina</i> L.	Balsam apple	Gàràáfínií	Fresh leaf and stem	w	Jaundice (Class 2) Associated with swelling of whole body (oedema) due to excessive fluid accumulation into tissues	Maceration	Orally

Table 2. Continue

Family	Botanical Name	English Name	Local/Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Cucurbitaceae	<i>Momordica charantia</i> L.	Balsam apple	Gàràáfùníí	Fresh leaf and stem	w	Jaundice (Class 2) associated with swelling of whole body (oedema) due to excessive fluid accumulation into tissues	Maceration	Orally
Cucurbitaceae	<i>Momordica charantia</i> L.	Balsam apple	Gàràáfùníí	Whole plant	w	Post-partum haemorrhage	Decoction	Orally
Cyperaceae	<i>Cyperus articulatus</i> L.	Jointed flatsedge	Kàájíjì	Fruit	w	Cough	Decoction	Orally
Ebenaceae	<i>Diospyros mespiliformis</i> Hochst. Ex A. DC.	West African ebony	Kányà	Leaves, stem bark, root	w	Leprosy	Decoction	For early symptoms, orally. For already manifested symptom/sign, mix powder with little water and apply topically on affected limb
Euphobiaceae	<i>Securinega virosa</i> (Roxb.) Baill.		Tsa	Stem bark, leaves	w	Gastric ulcer	Decoction	Orally
Euphobiaceae	<i>Chrozophora senegalensis</i> (Lam.) A. Juss.		Dámáǵìí	Whole plant	w	Diarrhoea	Decoction	Orally
Fabaceae	<i>Senna occidentalis</i> L.	Cofee senna	Màǵàmǵàríí	Seed	w	Erectile dysfunction	Direct	Orally
Fabaceae	<i>Senna occidentalis</i> L.	Cofee senna	Màǵàmǵàríí	Leaves	w	Joint pain (<i>Sànyí</i>)	Powder	Topically
Fabaceae	<i>Senna occidentalis</i> L.	Cofee senna	Màǵàmǵàríí	Leaves	w	Malaria	Decoction	Orally
Fabaceae	<i>Senna siamea</i> (Lam.) irwin & Barneby.	Kassod or Cassod	Màǵgaa, Mǵgaa	Leaves	w	Malaria	Decoction	Orally
Fabaceae	<i>Senna occidentalis</i> L.	Cofee senna	Màǵàmǵàríí	Leaves, root	w	Oedema/ Swollen limbs	Ointment	Topically

Table 2. Continue

Family	Botanical Name	English Name	Local /Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Fabaceae	<i>Prosopis Africana</i> (Guill & Perr.) Taub.	Iron wood; Axlewood; false locust	Kirya	Stem bark	w	Jaundice (Class I) associated with	Pulp	Orally
Fabaceae	<i>Pterocarpus erinaceus</i> Poir.	African rosewood	Mádobiya	Stem bark	w	Anaemia	Decoction	Orally
Fabaceae	<i>Pterocarpus milbraedii</i> DC.	African rosewood	Mádobiya	Stem bark	w	Anaemia	Decoction	Orally
Fabaceae	<i>Paráia biglobosa</i> (Jacq.) R.Br. ex G. Don.	Locust tree	Dóórāwā	Stem bark	w	Urinary tract infection	Maceration	Orally
Fabaceae	<i>Tetrapleura tetraptera</i> (Schun and Thonn)	Prekese/ Soup perfume	Gawo	Stem bark	w	Mouth rashes	Decoction	Mouth rinsing
Fabaceae	<i>Acacia nilotica</i> L.	Egyptian mimosa	Gábārūtūwāá / Bágārūtūwāá	Fruit pod	w	Bleeding	Direct	Topically
Fabaceae	<i>Acacia sieberana</i> DC.	Paperbark thorn	Fárār káyā	Root and stem	w	Piles and general body weakness	Maceration	Orally
Loranthaceae	<i>Englerina gabonensis</i> (Engl.) Balle.	Balle	Káucín kásá	Root bark	w	Piles	Direct	Orally
Maliaceae	<i>Khaya senegalensis</i> (Destr.) A. Juss	Mahogany	Máfācēí	Stem bark	c	Skin rash	Direct	Topically
Maliaceae	<i>Azadirachta indica</i> A. Juss	Neem tree	Dar bejiya'/ Dóogón yáárò	Fruit, flower	c	Typhoid and malaria	Direct	Orally
Moraceae	<i>Ficus ingens</i> (Miq.) Miq.			Stem bark, Leaves	w	Toothache	Ointment	Topically
Moraceae	<i>Ficus polita</i> Vahl.		Dūmīii	Stem bark, Leaves	w	Stomachache, chest pain	Decoction	Orally
Moraceae	<i>Ficus thoningii</i> Blume		Céédīyāá	Stem bark, Leaves	c	Jaundice	Decoction	Orally

Table 2. Continue

Family	Botanical Name	English Name	Local /Hausa Name	Part used	Habitat	Therapeutic use	local preparation	mode of administration
Moraceae	<i>Ficus lutea</i> Vahl.	Large-fruited sycamore	'Baurén kurmi	Root	w	Cough	Direct	Orally
Moringaceae	<i>Moringa oleifera</i> Lam.	Drum stick tree	Zogale	Leaves	c	Malaria	Decoction	Orally
Moraceae	<i>Musa sapientum</i> L.	Banana	Áyáhá	Leaves	c	Anaemia; Malaria	Maceration	Orally
Myrtaceae	<i>Psidium guajava</i> L.	Guava	Góóháá	Leaves	c	Malaria; Typhoid	Decoction	Steam-bath and orally
Myrtaceae	<i>Eugenia caryophyllus</i> (L.) Merr. & L.M. Perry	Cloves	Kámúfáříí	Fruit	c	Cough and Sneezing	Pulp	Orally
Poaceae	<i>Sorghum bicolor</i> (L.) Moench	Sorghum	Dááwáá	Leaves and roots	c	General body pain	Decoction	Orally
Poaceae	<i>Cymbopogon citratus</i> (DC.) Stapf.	Lemon grass		Leaves	c	Malaria, common cold, Diarrhoea	Decoction	Steam-bath and orally
Polygalaceae	<i>Securidaca longipedunculata</i> Fresen.	Violet tree	Sányáá	Root bark	w	Possession by Witchcraft	Ointment	Topically
Rhamnaceae	<i>Ziziphus mauritiana</i> Lam.	Jujube	Mágáryáá	Leaves	w	Burns	Decoction	Orally
Rhamnaceae	<i>Ziziphus mauritiana</i> Lam.	Jujube	Mágáryáá	Leaves	w	Toothache	Direct	Topically
Rhamnaceae	<i>Ziziphus spina-christi</i> (L.) Desf.	Christ's thorn	Kúrná	Leaves	w	Ring worm	Ointment	Topically
Rubiaceae	<i>Mitracarpus hirtus</i> (L.) DC.	False button weed	Góógáá maásúú	Whole plant	w	Malaria	Maceration	Orally
Rubiaceae	<i>Feretia apodanthera</i> Del.		Kúruúfúruú	Stem bark Root	w	Erectile dysfunction	Direct	Orally
Sapotaceae	<i>Vitellaria paradoxa</i> C.F. Gaertn.	Shea	Kádányá	Leaves	w	Abdominal pain	Direct	Orally
Zinziberaceae	<i>Zingiber officinale</i> Roscoe	Ginger	Cittáá mai kwááyáá	Tuber stem	c	Cough, general body ache	Maceration	Orally

Key: C= Cultivated, W= Wild, W/C= Wild or cultivated

Results and Discussion

A total of 120 respondents consented to participate in this study. The socio-demographic status of participants in this study are presented in Table 1. Results obtained revealed more Males 80 (67%) than females 40 (33%) participated in this study. This is in consonance with the findings of a similar study (27, 28), but contradicts those of Kankara *et al.* (2015) ² who reported more

females to have participated in their study. However, it is worth mentioning that their finding was associated with the area under investigation (traditional maternal healthcare) indicating that females, especially housewives and traditional birth attendants had more interests and concerns on ailments related to child birth in rural settlements. Similarly, the table also indicates that adults ranging between the ages of 20 and

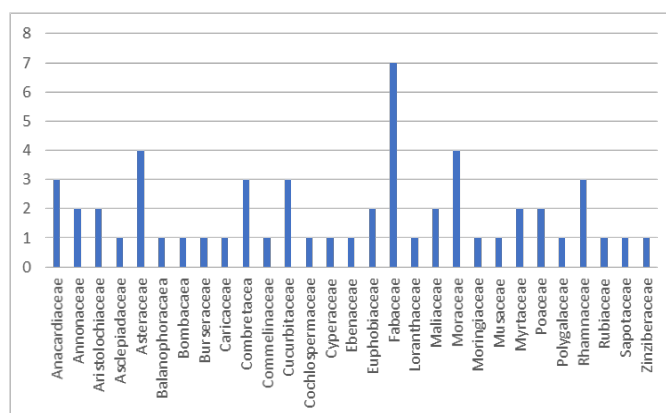


Figure 2. Distribution of Plant families identified in the communities

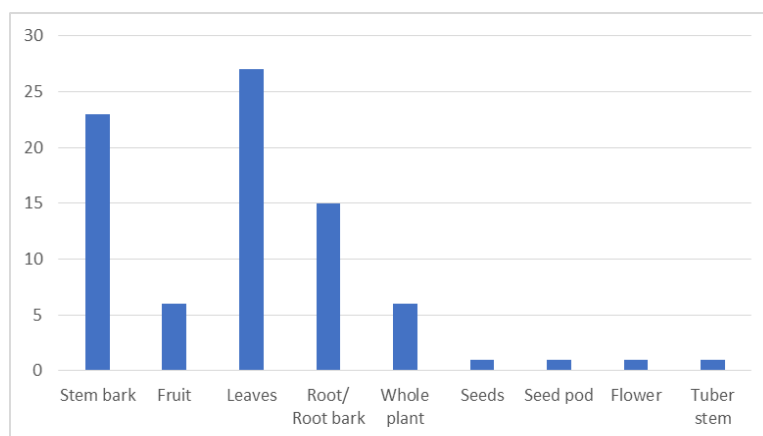


Figure 3. Plant part used in the management of ailments in the study area

above participated in the study, with majority of the respondents 36 (30%) falling in the range of 51-60 years of age. This indicates that the elderly population constitutes most of the traditional medicinal practitioners and remains the custodian of traditional knowledge. This poses a significant threat to knowledge of traditional medicine in the study area. The result agrees with that of Kankara *et al.*, (2018)⁵. Regarding the educational status of the respondents, results showed that 34 (28.33%) had secondary education and made up the largest group of respondents, while 25 (20.83%) had no formal education at all. To understand the interests and specialties of traditional medicinal practitioners in the study area, specialization was also determined. In terms of specialization, 28 (23.33%) were observed to have specialized in the

treatment of fever and fever-related illnesses. It is important to note that the interviewed traditional herbalists did not differentiate between Typhoid, malaria or any disease presenting with fever.

Based on their beliefs, all disease presenting with fever were either typhoid and/or malaria, without regard to the etiological agent. In this case, all illness with fever are either malaria or typhoid “suspected” cases, since no laboratory tests are performed to validate their claim. Hence, any plant that can cure malaria may also be prescribed for typhoid and vice versa, provided fever is present. Most of the herbalists - 23 (19.17%), also specialized in prescribing herbal remedies believed to cure piles while those who specialized in the treatment of hepatitis were the minority - 10 (8.33%).

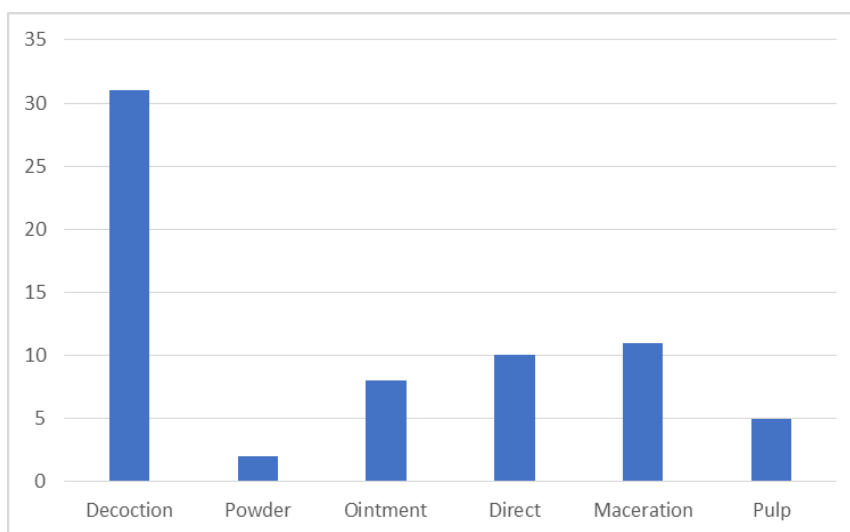


Figure 4. Method of local preparation of medicinal plants

Medicinal plants used in folklore medicine of communities in the study area are presented in Table 2. Results are summarized in botanical families, plant species, English names, common/local (Hausa) names, parts used, therapeutic potentials, method of local preparation and administration. A total of 60 medicinal plants belonging to 28 botanical families were identified and their medicinal values recorded. Out of the 28 botanical families recorded, Fabaceae family was the most common botanical family (Figure 2) with nine (9) species of medicinal plants

used for treating various ailments followed by Asteraceae and Moraceae families with four (4) representative medicinal plants each. These results corroborate with findings of similar studies^{2, 29}, but disagree with that of Lawal *et al.*²⁸ who reported Leguminosea as the most dominant plant family used in South-west Nigeria. This variation may not be unconnected with the geographical areas, cultures and traditions of the geopolitical zones in Nigeria. Most of the plant families identified in this study had three³ representative plant species or less.

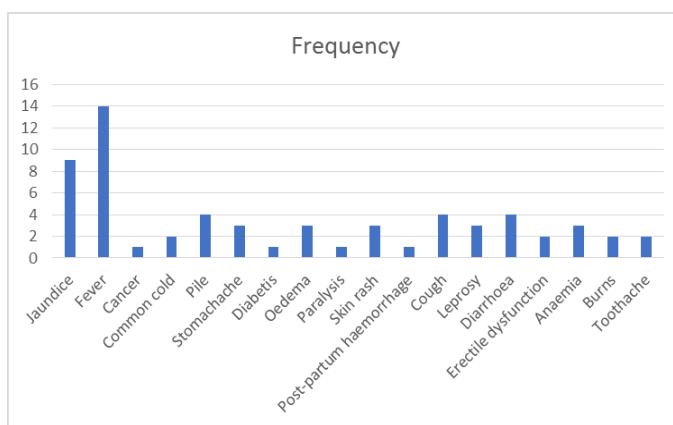


Figure 5. Some common ailments managed by traditional herbalists in the study area

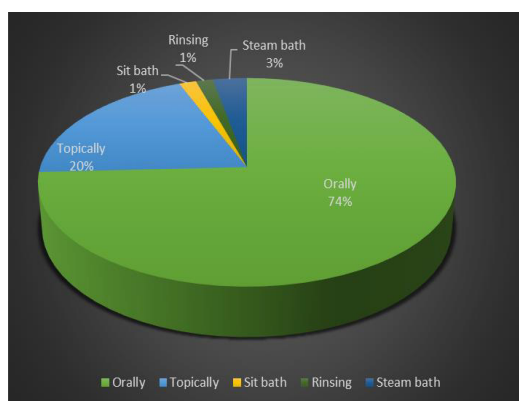


Figure 6. Mode of administration of medicinal plants

Plant parts used to treat diseases as identified in this study are presented in Figure 3. Results indicate that leaves are the most common parts used followed by stem bark and roots/root bark as previously reported in similar studies [2, 30]. Other parts such as flowers or seeds are the least used plant parts in the management of diseases. However, as demonstrated in Figure 3, a whole plant or in some cases the fruits are also used to manage or treat disease conditions.

In terms of local preparations of medicinal plants, findings (Figure 4) revealed that most preparations are based on decoctions and macerations. This coincides with the finding of a similar study (Kanakara et al. 2015) ². The use of decoctions may not be unconnected to traditional beliefs that boiling causes more rapid extraction of bioactive ingredients. Herbalists believe that in decoctions, a red potash otherwise known as “*jar kanwa*” in local language (Hausa) neutralizes bitter tastes of some plants. Similarly, medicinal plants may be administered directly in their raw forms or applied as ointments. Results further shows that the least most common preparations for medicinal plant parts is the powdered form. It is worth mentioning that most of these herbal preparations are used as combinations with other plants or recipes rather than monotherapies.

Based on the findings of this study, fever (*Zazzabi* in Hausa) is the most common ailment treated by traditional herbalists in the study area (Figure 5). This is not surprising however, because according to them, any form of fever is either typhoid or malaria. While many disease conditions present with fever at the onset or in the course of disease progression, interviewed herbalists classified all forms of fever as typhoid or malaria and believed, based on their assertion, that any plant that can treat one, may also be

used treat the other form of fever. Here, malaria, typhoid or any form of fever are all categorized as fever. However, details on these fevers are presented in Table 2. Diseases frequently treated by these herbalists in addition to fever include jaundice, piles, cough and diarrhea among others. According to the practitioners, jaundice is classified into two forms: those causing yellowing of eyes and swelling of abdominal part on the first part and those causing swelling of entire body (oedema) due to excessive fluid accumulation into tissues. In either case, the practitioners prescribe different medications depending on the symptoms presented. Some medicinal plants for example; *Senna occidentalis* ^{31, 32}, *Moringa oleifera* ¹⁸, *Carica papaya* and so on, had been reported for their antimalarial properties.

Diseases such as cancer, diabetes, and postpartum haemorrhage are the least mentioned or treated by the herbalists interviewed. For cancer, this finding may not be unconnected with the preservation of traditional knowledge in the management of the disease, as most of herbalists found it difficult to expose the plants used in the treatment of cancers. They believed that this knowledge was to be inherited by their children or relatives as it was their heritage and source for living. For postpartum haemorrhage, obtained results may be related to the limited number of female herbalists who consented to participate in this survey and of course lack of consultation of traditional birth attendants.

From the results obtained (Figure 6) most of these (74%) medicinal plants are administered orally or applied topically (20%) on skin surfaces. This agrees with the results of (Kankara et al., 2015) ². On rare occasions however, medicinal plants may be taken orally and following a decoction, be used in a steam bath. Moreover, medicinal plant preparations may only be used for

mouth rising or sit bath especially in conditions associated with urinary tract infections, piles or maternal disorders [33-35].

Conclusion

While most medicinal plants identified in this study had previously been reported in the literature to possess various therapeutic potentials, to date, little is known about the bioactive components of these plants and their concentrations. Therefore, further studies to extract biologically active compounds from these medicinal plants and substantiate the traditional claim for their use, by locals, to treat or manage diseases as reported in this study are needed.

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Conflict of Interest

All the authors declare no conflict of interest.

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