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Conducting an Inventory and Ethnobotanical Assessment of Plant Species at Osun State College of Education in Ila-Orangun, Osun State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Ethnobotanical survey of medicinal plants was carried out in 6 major markets in Ila Local Government Area to propose best conservation methods for the identified species.
Study Design: The study was designed to assess the plant species in osun state college of education, Ila-orangun, osun state, Nigeria.
Place and Duration of Study: An inventory of plant species in Osun State College of Education, Ila Orangun in Igbomina Region was done to establish a data base of the plant species and identify plants of economic importance in the study area, in the month of February, 2023.

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Methodology: Information was obtained through interviews using semi-structured questionnaires. Field surveys with herb sellers, herbalists and elderly people were carried out. Descriptive statistics were used to present the data. Fidelity ratios and Informant consensus agreements were also calculated.

Inventory of Plant Species

Field Survey: A thorough field survey was conducted within the college campus and surrounding areas to identify and document all plant species present.

Documentation: The scientific names, common names and local names of each plant species observed were adequately recorded.

GPS Mapping: GPS coordinates were used to map the locations where different plant species were found to create a comprehensive database.

Collection of Specimen: Herbarium specimens of each plant species were collected for further identification and verification. The specimens were properly pressed, dried and mounted at the herbarium of Lagos State University.

Photographic Documentation: Photographs of each plant species which include close up of the leaves, flowers, fruits and some other distinctive features were taken to aid proper identification.

Data Management: Collected data were organized into a systemic database that include information such as habit, ethnobotanical values and ecological roles.

Ethnobotanical Assessment

Interviews and Surveys: The local community dwellers, the herb sellers who are custodians of knowledge about herbs, the staff of the college and herbalists were interviewed to gather information on the traditional uses of the plants in the study area and the information were documentd as it relates to medicinal uses, cultural practices, food sources and other traditional uses.

Documentation of Uses: Detailed information on the specific parts used was recorded.

Analysis of Ethnobotanical Data: Analysis of the data collected to identify patterns in plant uses and their cultural significance was done using factor informant agreement and Fidelity ratios. Findings were compared with existing ethnobotanical literature.

Community Participation: Community members were and local experts in the knowledge of plants and herbs were involved throughout the assessment process to ensure cultural sensitivity accuracy in recording ethnobotanical knowledge.

Reporting and Recommendations

Report Compilation: Comprehensive report detailing the findings on the plant species inventory and ethnobotanical assessment which include tables, graphs and descriptions to illustrate the diversity of plant species and their uses was done.

Conservation Recommendations: Recommendations for conservation and management of plant resources based on the assessment findings were made taking into consideration the species with ethnobotanical or cultural importance.

Education and Awareness: Adequate suggestion on educational programmes or initiatives within the college and local community to raise awareness about the importance of conserving plant biodiversity and traditional knowledge was made.

Policy Implication: Potential policy implications relating to sustainable use of plant resources and preservation of traditional knowledge among decision makers and stake holders were discussed.

Results: A total of 104 plant species belonging 43 families were identified in the study area and 78 out of the identified plant species were reported in the treatment of various health conditions. Family Asteraceae was dominant representing 11 % of the plant species documented. *Azadirachta indica* was the preferred species for treating malaria. Leaves (32%) were the most frequently used parts in preparing herbal remedies. Decoctions and oral route of administration were commonly used method of herbal medicine preparation and administration respectively. 70 health conditions grouped in 21 categories were treated using medicinal plants. Informant consensus agreement was highest for infections which included STDs and STIs, gyneacological issues, Infant care, jaundice/typhoid/malaria/fever (1.0), this indicate homogeneity of informant's knowledge about remedies used. *Azadirachta indica* and Acalypha wilkesiana Muell had 100 % fidelity level for treatment of malaria and Infant care respectively.

Conclusion: The diversity of medicinal plant species used and the associated indigenous knowledge are of great value to the local community and their conservation and preservation is

paramount. The ethno medicinal uses of the documented plants provides basic data for further research focused on pharmacological studies and conservation of the endangered species is very important.

Keywords: Ethnobotanical; pharmacology; homogeneity; gynecology.

1. INTRODUCTION

Plants are a dominant and essential component of various habitats. They form the basis of many Earth's biomes, such as grasslands, taiga, and tropical rainforests. Land plants play a vital role in the water cycle and other biogeochemical cycles, and some have a symbiotic relationship with nitrogen-fixing bacteria, contributing to the nitrogen cycle. Plant roots are crucial in soil development and erosion prevention [1].

The use of herbal medicine is increasing globally, with over 80% of the population in developing countries, including Africa, relying on plants for primary healthcare needs [2]. However, many medicinal plants and their indigenous uses remain undocumented. The rich knowledge of African cultures in utilizing plants for remedies is gradually being lost due to lack of documentation and the passing away of custodians before transmitting the information to younger generations. Ethnobotanical studies are crucial for documenting indigenous knowledge, preserving biodiversity, and facilitating research on the safety and efficacy of medicinal plants [3].

Recent initiatives recognize the dependence on plant-derived medicine in developing countries like Nigeria. However, some medicinal plants are becoming scarce due to environmental destruction caused by anthropogenic factors. Urban forestry is now acknowledged as a viable method for conserving medicinal plants. Trees not only provide food but also contribute to overall ecosystem health and well-being. Establishing the flora profile and documenting the ethnobotanical values of plant species on the Osun State College of Education campus in Ila Orangun, Igbomina Region of Osun State, Nigeria is necessary for developing strategies for their conservation. The surrounding area of the college comprises a variety of trees, shrubs, grasses, and herbs.

The aim of this research was to establish the data base of plant species in Osun State College of Education, Ila Orangun to produce a compendium of plant species identified in Osun State College of Education Ila Orangun and to identify among the plants the ones of high medicinal value and propose best conservative methods for the identified species.

2. MATERIALS AND METHODS

2.1 Collection of Plant Samples

The study was conducted in Osun State College of Education, Ila Orangun, Igbomina Region, Osun State, Nigeria. It lies on the latitude 8.1^{o} N 8.818^{o} S and longitude 4.54 ^{o} W 7.063 ^{o} E (Fig. 1). The plants were collected in the month of February, 2023 from six (6) different sampling plots as stated below:

-School of Sciences (Route A)
-School of Languages (Route B)
-School of Education (Route C)
-School of Vocational and Technical Education (Route D)
-School of Arts and Social sciences (Route E)
-Administrative Block (Route F)

2.1.1 Identification of plant species

The Botany Department at Lagos State University in Ojo, Lagos State, undertook the task of processing and classifying the gathered plants. Each plant was assigned a voucher number, which was recorded and linked). Voucher specimens were partially processed, and the plants were identified in the field using plant identification field guides [2]. A comprehensive species list was compiled, documenting details such as family classification, growth habits, and regional names specific to the study area.

2.1.2 Survey

The primary focus of the field survey in this study was the custodians of traditional medicine, and their informed consent was obtained prior to conducting the interviews. The interviews were conducted in the March, 2023 after proper identification of the plant species in the local language with the assistance of a research

assistant fluent in the regional dialect, using guided semi-structured questionnaires. To collect data on medicinal plants used for treating various ailments in the study area, a modified version of Martin's method [4] was employed. A purposeful sampling approach was utilized, specifically targeting six out of ten major markets where reliance on plants for basic healthcare is prominent, and where individuals rely solely on herbal medicine as their source of income. Fig. 1 Map of Ila Orangun, Osun State showing Osun State College of Education.

Interviews were conducted randomly through questionnaires with a total of 100 local Key respondents which were made up of elders, alternative therapy experts (herb sellers), herbalists, health and agriculture officials in the six major markets located within Ila Local Government, Igbomina region. Selected markets were Ita-Obajoko, Ita-Sapon, Kajola, Ita-Baba, Oja-obi and Atewogbade while the interviews were conducted in each market with the aid of semi structured questionnaire matrix.The interviews with herb sellers, herbalists and elderly people was conducted in local language for accurate data recordings.Secondary data were obtained via the internet and established records.The collected information include local names, the importance of each plant species, ethnobotanical uses of the plant species, the parts of plants used for medicinal purposes, modes of preparation and administration of the identified plant species.

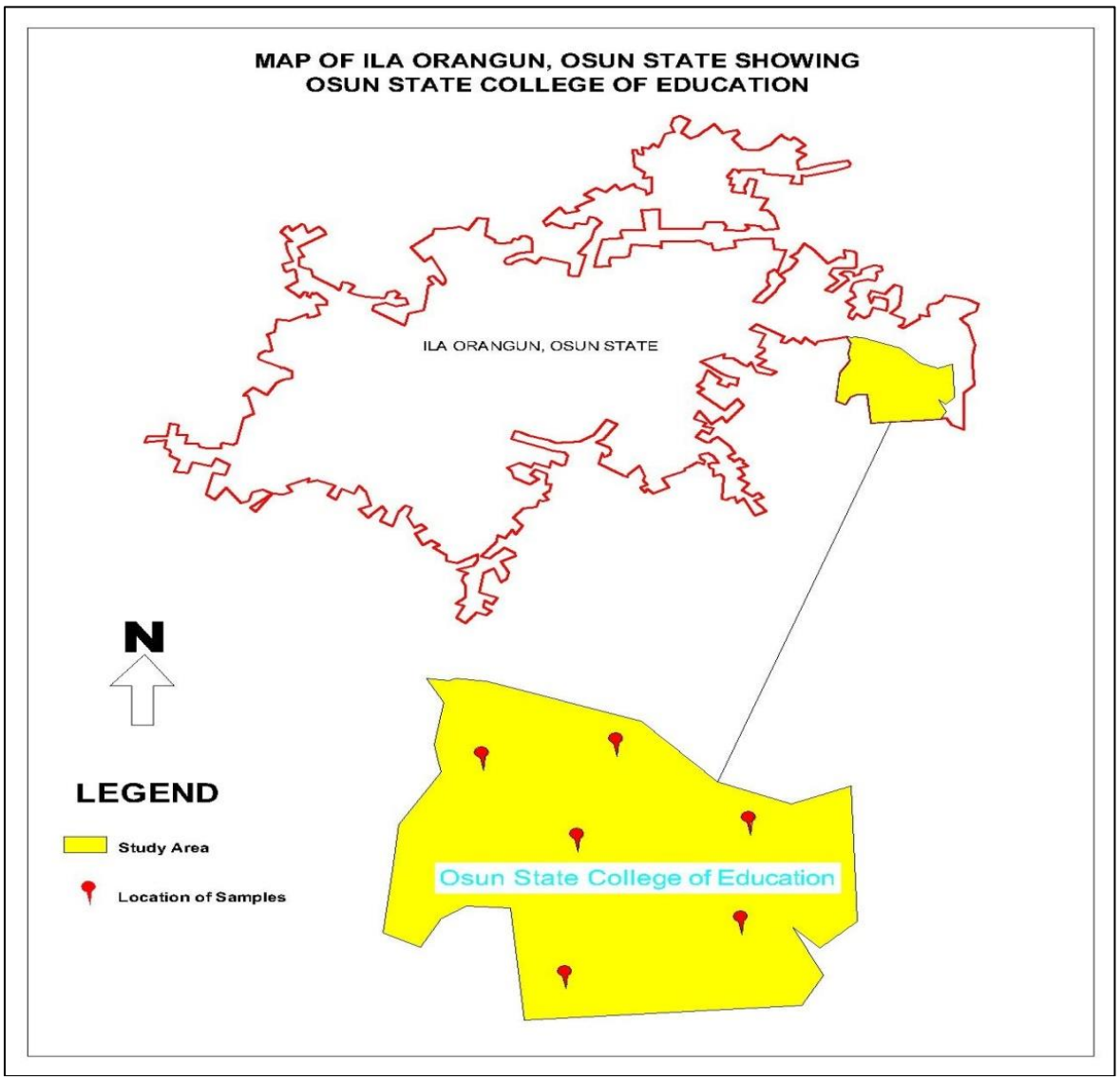

Fig. 1. Map of Ila Orangun, Osun State showing Osun State College of Education

2.1.3 Informant consensus agreement

The informant consensus factor (Fic) was calculated in order to assess the level of agreement among the informants regarding the use of medicinal plants. The formula used to calculate the Fic is as follows:

$$F_{ic} = \frac{N_{ur} - N_{taxa}}{N_{ur} - 1}$$

N_{taxa} = Number of species in each use category. It estimates the relationship between the number of use reports (N_{ur}) minus the number of taxa used (N_{taxa}) and the number of use reports in each category minus one [5].

Fic values tend to be low when plants are randomly chosen or when informants withhold or dispute information about their use for a specific illness category. Conversely, Fic values are high, nearing one, when a significant proportion of informants utilize the same plant species, when there is a well-established criterion within the community, or when there is effective communication among informants. This suggests that medicinal plants with higher Fic values are believed to have greater potency in treating specific conditions, as indicated by research conducted by Cakilcioglu et al. [6].

2.1.4 Fidelity level (FL)

The Fidelity Level (FL) for each of the 16 favoured species was determined by assessing the informants' preferences for each species based on their recommendations for treating specific serious illnesses. The FL is calculated as Ip divided by I_u, multiplied by 100%, where I_p represents the proportion of informants who recommended using a particular species for a specific serious illness, and I_u represents all informants who mentioned the species for any purpose.

2.1.5 Data analysis

The diseases treated by the medicinal plants were categorized into different groups based on the classification system proposed by Iwu [7]. Descriptive statistics, including frequencies and percentages, were employed to summarize the data. SPSS 16 was utilized for the data analysis, following the approach described by Adu et al. [8].

3. RESULTS AND DISCUSSION

3.1 Survey Reports

3.1.1 Documentation of the list of plant species and their Habits distribution pattern in the Study Area

Exactly one hundred and four (104) plant species belonging to 43 families were found within Osun state College of Education, Ila Orangun campus as shown in Table 1. Table 1 revealed that family Asteraceae had the highest number of species (11%) followed by family Euphorbiaceae with 10 species (10%), family Malvaceae had 9 species (9%), families Amaranthaceae, Fabaceae and Poaceae had 5 species each (5%), families Anacardiaceae, Combretaceae, Leguminosae, Phyllantaceae, Rubiaceae and Rutacea had 3 species each (3%), families which had 2 species each in the study area were: Arecaceae, Moraceae, Myrtaceae and Zingiberaceae, the remaining families had only one specie each in the study area (Table 1).

In relevance to Katema's study, Fig. 2 illustrates that herbs constituted the majority of plants in the research area (38%), followed by trees (37%) and shrubs (20%), while grasses had the lowest representation (5%).

3.1.2 Plant parts with medicinal value

In the research area, leaves are primarily employed for medical purposes (Fig. 3). In many Nigerian communities, leaves are first used to prepare herbal medicines, then roots, and finally barks [9,10,11]. Because they are easier to obtain in huge quantities than other plant parts, leaves may be used at higher rates than other plant parts. According to Passulacqua et al. [12] and [13], leaves—the primary photosynthetic organ in plants—are an essential part of the natural pharmacy because they help produce ingredients that are more pharmacologically effective against illnesses. The preference of leaves over other plant parts is therefore believed to be caused by an accumulation of active substances like tannins and other alkaloids, according to Ajao et al. [13].

3.1.3 Ethnobotanical importance of the plant species identified in the study area

Identified plant species are of diverse uses which are medicine, fuelwood, vegetable, Spice/ condiments, fruit, traditional right, timber,

chewing stick, ornamental and shelter based on the field reports. This is in correlation with the reports of Kayode et al. [14,15,16], (Fig. 4).

3.1.4 Uses of plants collected from the site

Fig. 4 revealed that most plant species in the study area have more than one ethnobotanical uses, 30% of the plant species were used for medicine and food, 25% were only consumed as food, 10% were used for about four ethnobotanical purposes and only few representing 2% were used for just ornamental purposes in the study area.

Fig. 4 also showed the list of plant species that were identified to be of high medicinal value to treat different categories of health related issues (later grouped into 21 in Table 3) and analysed using Factor Informant Concensus and Fidelity Ratio as used by Tugume et al. [2]. The number of species used to treat different ailments were revealed in Fig. 4.

Table 1. List of Plant Species in Osun State College of Education, Ila-Orangun

S/N	Botanical Name	Common Name	Vernacular (Igbomina)	Family
1	*Abelmoschus esculentus*	Okra	Ilasa/Ila	Malvaceae
2	*Abrus precatorius*	Rosary pea	Oju ologbo	Fabaceae
3	*Acacia farnesiana*	Needle bush	Bonni	Leguminosae
4	*Acalypha wilkesiana Muell Arg.*	Red acalypha	Aworoso	Euphorbiaceae
5	*Curcuma longa*	Turmeric	Ataile pupa	Zingiberaceae
6	*Afzelia Africana*	Mahoghany	Apa	Leguminosae
7	Ageratum conyzoides	Goat weed	Imi Esu	Asteraceae
8	*Alternanthera brasiliana*	Brazillian weed	Rekureku	Amaranthaceae
9	*Alternanthera dentate*	Joseph's coat	Sawere	Amaranthaceae
10	*Amaranthus hybridus*	Amaranthus	Tete	Amaranthaceae
11	*Anacardium occidentale*	Cashew	Kasu	Anacardiaceae
12	*Andasonia digitata L.*	Baobab	Ose	Bombacaceae
13	*Aspilia Africana*	Wild sunflower	Yunyun	Compositaceae
14	*Azadirachta indica*	Neem	Dongoyaro	Meliaceae
15	*Bambusa vulgaris*	Bamboo	Oparun	Poaceae
16	*Basella alba*	Lettuce	Amunututu	Basellaceae
17	*Bidens pilosa*	Hairy beggatrick	Laganmoyan	Asteraceae
18	*Blighia Sapida*	Ackee apple	Isin	Sapindaceae
19	*Bridelia macrantha*	Bridelia	Ira	Phyllanthaceae
20	*Caletropis procera*	Apple of Sodom	Bomubomu	Asclepiadaceae
21	*Glyphaea brevis*	Monachino	Atori	Malvaceae
22	*Canthium horridum*	Basik	Biye	Rubiaceae
23	*Carex pendula*	Hanging sedge	Esun	Cyperaceae
24	*Carica papaya*	Pawpaw	Ibepe	Caricaceae
25	*Celosia argentea*	Woolflower	Sokoyokoto	Amaranthaceae
26	*Chromolaena odorata*	Siam weed	Akintola	Asteraceae
27	*Chrysophyllum albidum*	Africanstar apple	Agbalumo	Sapotaceae
28	*Citrus aurantifolia*	Lime	Osan wewe	Rutaceae
29	*Citrus reticulate*	Tangerine	Tangirini	Rutaceae
30	*Citrus sinensis*	Orange	Osan mimu	Rutaceae
31	*Cola laurifolia*	Laurel-leaved kola	Obi edun	Malvaceae
32	*Cola nitida*	Kolanut	Obi	Malvaceae
33	*Colocasia esculenta*	Cocoyam	Kooko	Aracaceae
34	*Combretum paniculatum*	Forest flame	Eko omode	Combretaceae
35	*Corchorus olitorius*	Jew's mallow	Ewedu	Malvaceae
36	*Crassocephalum rubens*	Red flower rag leaf	Ebolo	Asteraceae
37	*Croton zambesicus*	Leave erosion	Ajekobale	Euphorbiaceae
38	*Cylicodiscus gabunensis*	African green heart	Okan	Fabaceae
39	*Cymbopogon giganteus*	Lemongrass	Koriko oba	Poaceae

S/N	Botanical Name	Common Name	Vernacular (Igbomina)	Family
40	*Dysphania ambrosioides*	Wormseed	Asin	Amaranthaceae
41	*Elaeis guineensis*	Palm tree	Ope	Arecaceae
42	*Eleusine indica*	Goose grasses	Ese kannakanna	Poaceae
43	*Emilia sonchifolia*	Tassel flower	Odundun	Asteraceae
44	*Erythrina variegate*	Tigers claw	Ologun sese	Fabaceae
45	*Eucalyptus globulus labill*	Blue gum	Eucalyptus	Myrtaceae
46	*Eugenia uniflora*	Cayenne cherry	Asofeyeje	Myrtaceae
47	*Euphorbia heterophylla*	Milk weed	Emi ile	Euphorbiaceae
48	*Euphorbia milii*	Crown of thorns	Ade egun	Euphorbiaceae
49	*Euphorbia tithymaloides*	Devils backbone	Egele	Euphorbiaceae
50	*Ficus triangularis*	Fig tree	Ogori	Moraceae
51	*Gliricida sepium*	Quick stick	Agunmaniye	Papilionaceae
52	*Gmelina arborea*	Gmelina	Igi oba	Lamiaceae
53	*Hibiscus variegatum*	Hibiscus	Ewe sobo	Malvaceae
54	*Jatropha curcas*	Jatropha	Lapalapa funfun	Euphorbiaceae
55	*Jatropha gossypiifolia*	Bellyache bush	Botuje pupa	Euphorbiaceae
56	*Jatropha multifida*	African toothpaste	Ogege	Euphorbiaceae
57	*Kalanchoe tetraphylla*	Dessert cabbage	Eti	Crassulaceae
58	*Mallotus subulatus*	Mallotus	Pepe	Euphorbiaceae
59	*Mangifera indica*	Mango	Mangoro	Anacardiaceae
60	*Manihot esculenta*	Cassava	Ege	Euphorbiaceae
61	*Margaritaria discoidea*	Peacock berry	Awewe	Phyllantacea
62	*Melicia excels*	African teak	Iroko	Moraceae
63	*Mimosa pudica*	Sensitive plant	Patanmo	Fabaceae
64	*Mitracarpus scaber*	Girdle pod	Irawo ile	Rubiaceae
65	*Momordica charantia*	Bitter gourd	Ejinrin	Cucurbitaceae
66	*Moringa oleifera*	Moringa	Ewe igbale	Moringaceae
67	*Mucuna pruriens*	Mucuna	Werepe	Leguminosae
68	*Musa sapientum*	Banana	Ogede wewe	Musaceae
69	*Nicotiana tabacum*	Tobacco	Taba	Solanaceae
70	*Ocimum basilicum*	Scent leaf	Efinrin wewe	Lamiaceae
71	*Ocimum gratissimum*	Tea bush	Efirin	Lamiaceae
72	*Passiflora foetida*	Passion flower	Ododo	Passifloraceae
73	*Phyllantus amarus schum*	Stone breaker	Eyin olobe	Phyllantaceae
74	*Pirus communis*	Pear	Pia	Poaceae
75	*Platycladus orietalis*	Oriental arborvitae	Ododo	Cupressaceae
76	*Polyalthia longifolia*	False Ashoka tree	Igunnu	Annonaceae
77	*Pueraria Montana*	Kudzu vine		Fabaceae
78	*Ravenala madagariensis sonn*	Travellers palm	Ope oyinbo	Strelitziaceae
79	*Senna siamea*	Cassia	Kassia	Caesalpiniaceae
80	*Sesamum indicum*	Sesame	Eku	Pedaliaceae
81	*Sida acuta Burm F.*	Wire weed	Olosenpetu	Malvaceae
82	*Solanum aethiopicum*	Mock tomato	Gbagba	Solanaceae
83	*Solanum americanum*	Glossy nightshade	Odu	Solanaceae
84	*Solanum indicum*	Garden egg	Igba	Solanaceae
85	*Spermacoce ocymoides*	Girdle pod	Irawo ile	Rubiaceae
86	*Spilanthes paniculata*	Spot flower	Awerepepe	Asteraceae
87	*Spondias mombin*	Hogplum	Iyeye	Anacardiaceae
88	*Struchium sparaganophora*	Yerba De Faja	Ewurodo	Asteraceae
89	*Talinum triangulare*	Waterleaf	Gbure	Portulaceae
90	*Tamarix aphylla*	Tamarisk		Tamaricaceae
91	*Tectona grandis*	Teak	Igi oba	Lamiaceae
92	*Terminalia catappa*	Indian almond	Frutu	Combretaceae
93	*Terminalia ivorensis Chev A.*	Black afara	Idigbo	Combretaceae

S/N	Botanical Name	Common Name	Vernacular (Igbomina)	Family
94	*Theobroma cacao*	Cocoa	Koko	Malvaceae
95	*Thermatococcus danielli*	Praying leaf	Ewe eeran	Marantaceae
96	*Thunbergia erecta*	Kings mantle		Acanthaceae
97	*Tithonia diversifolia*	Mexican sunflower	Ododo	Asteraceae
98	*Tradescantia pallid*	Spiderwort		Commenlinaceae
99	*Tridax procumbens*	Tridax	Muwagun	Asteraceae
100	*Triplochiton scleroxylon*	African whitewood	Arere	Malvaceae
101	*Vernonia amygdalina*	Bitter leaf	Ewuro	Asteraceae
102	*Viguiera dentate*	Golden eye	Fibasako	Asteraceae
103	*Zea mays*	Maize	Agbado	Poaceae
104	*Zingiber officinale*	Ginger	Ata ile funfun	Zingiberaceae

Source: Field work, 2023

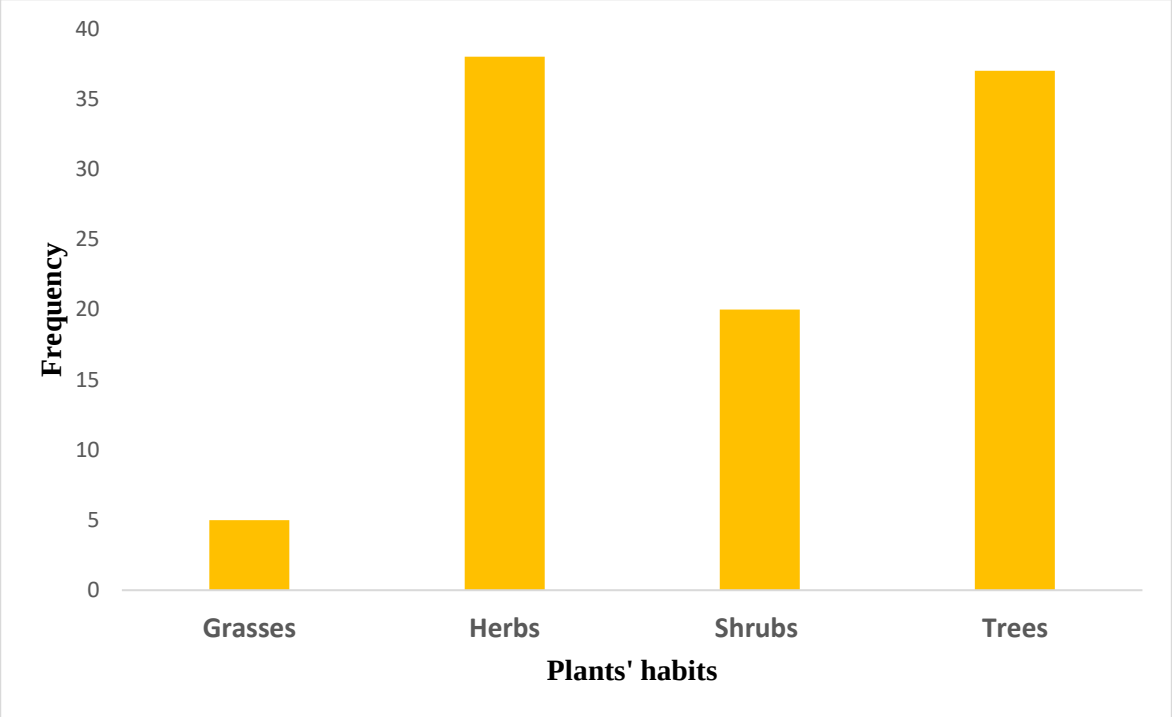

Fig. 2. Habit and frequency of the observed plant species

Some species treated wide range of ailments varying from one to nine per plant. Species that treated the highest number of ailments were *Anarcadium occidentale, Bridelia macrantha and Azadirachta indica* that were used in management of eight to nine health conditions each.

On the other hand, *Moringa oleifera, Emilia sonchifolia*, *Sesame indicum, Ocimum gratissimum,Gliricida sepium, Phyllantus amarus Schum, Mimosapudica and Acacia farnesiana* were each used in management of five to six health conditions, this is related to what Tugume *et al*., did in Uganda [2].

3.1.5 Informant Consensus Agreement (F_{ic})

To assess the significance of each plant species in treating different ailments, Table 2 employed the Factor Informant Consensus (Fic) method, as described by Cakilcioglu et al. [6]. Fic values range from 0 to 1, with values close to 1 indicating a high level of agreement among informants regarding the use of a specific plant species for a particular category of illnesses. Conversely, Fic values close to 0 suggest a low level of consensus among informants regarding the use of a plant species for a specific ailment category. By calculating Fic values for various categories of ailments, the aim was to assess the

consistency and uniformity of informants' knowledge regarding remedies for specific health conditions. The Fic values offered insights into extensively utilized plants, thereby emphasizing the need for further investigation through pharmacological and phytochemical studies. The highest F_{ic} (1.0) was scored for infections, gynaecological issues, infant care, poison, stroke and Low sperm count. The important plants used for infections (STIs and STDs were *Euphorbia heterophylla,Acacia farnesiana,Celosia argentea* and *Thermatococcus danielli*, for gynaecological issues (easy delivery, care during pregnancy and for winning baby) were *Cola laurifolia, Talinum triangulare* and *Corchorusolitorius*, those for infant care (small baby weight, healthy baby and skin inflammation in infants) included *Acalypha wilkesiana Muell, Andasonia digitata* and *Talinum triangulare* while those for poison were *Corchorus olitorius* and *Anacardium occidentale*.

Three ailment categories had the least F_{ic} value (0.7) but large number of respondents still reported same species used for the same ailment (Table 3).

3.1.6 Fidelity Levels (FL) of preferred plant species

In order to evaluate the significance of each plant species in treating severe illnesses [2], Table 3 presented a fidelity level (FL) for the 16 most popular plant species. The FL was determined based on the number of individuals who used a particular plant species to treat serious illnesses. FL is calculated as the ratio of the total number of informants who reported using a plant species for a specific primary condition (therapeutic usage) to the percentage of informants who claimed to have used the same plant species for any purpose. The FL is calculated using the formula (I_p/I_u) x 100, where I_p represents the proportion of informants who recommended using a species for a specific primary use, and I_u represents the total number of informants who indicated using the plant species for any use.

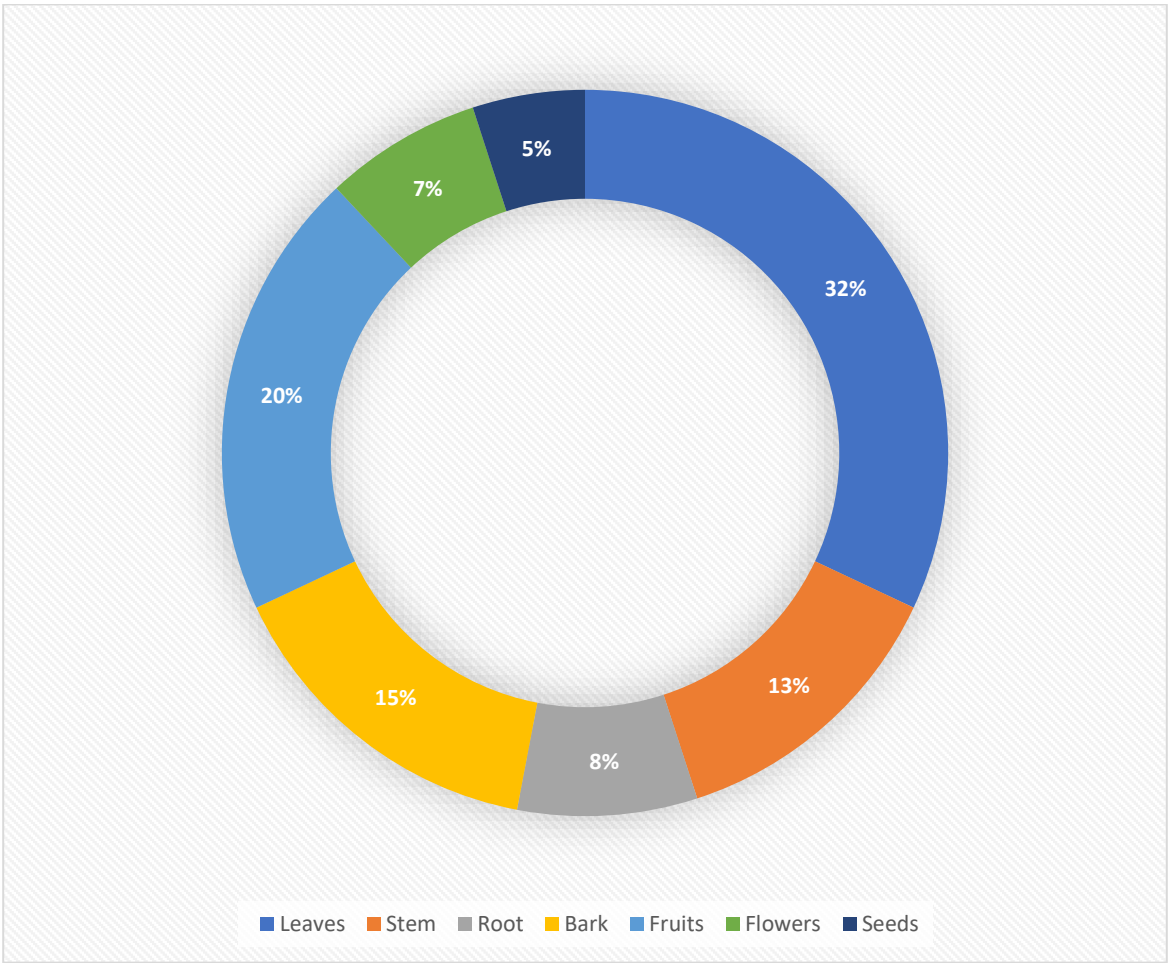

Fig. 3. Medicinal values or uses of the observed plant species

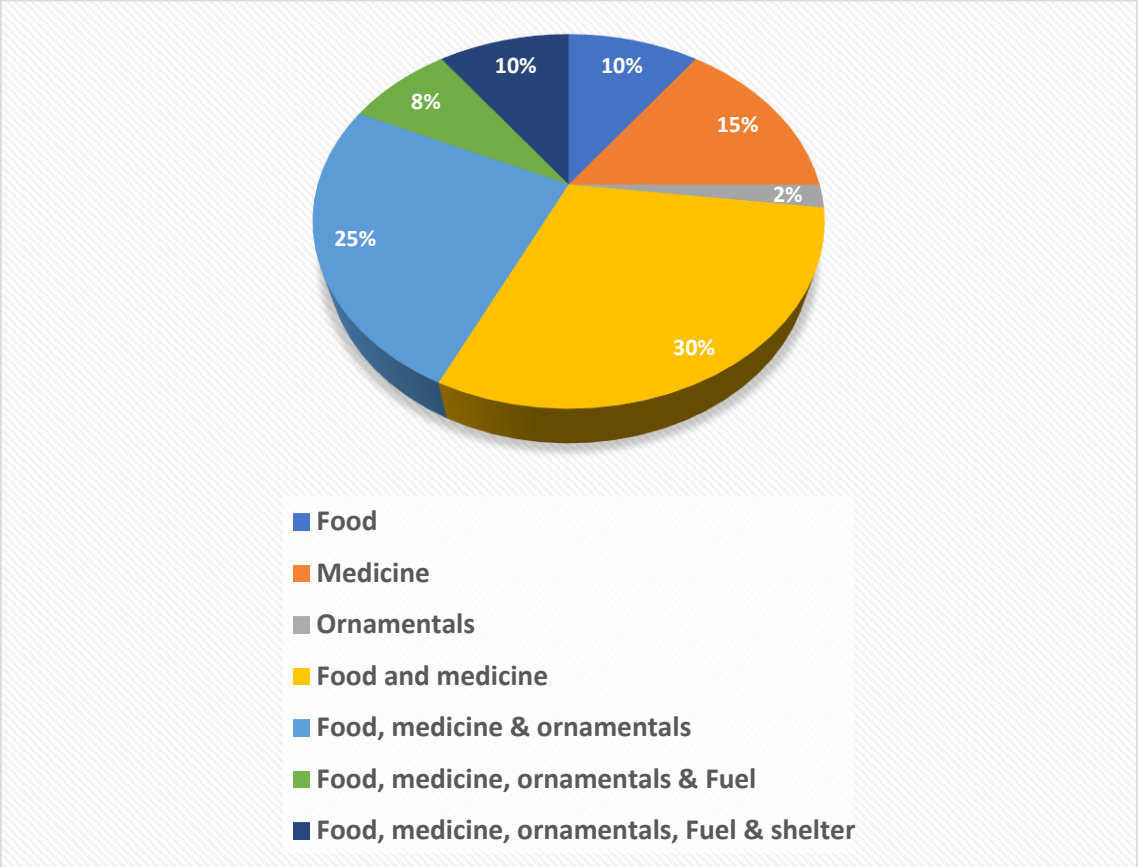

Fig. 4. Uses or value addition of the observed plants species

Table 2. Consensus agreement about uses of medicinal plants for ailment categories

Ailment Category	N_{taxa}	N_{ur}	F_{ic}
Blood system disorders	13	75	0.8
Arthritis & Inflammation	11	30	0.7
Infection (STIs & STDs)	4	73	1.0
Nervous system disorder	6	62	0.9
Skin infections	16	90	0.8
Gastro intestinal disorders	31	97	0.7
Gynaecological issues	3	80	1.0
Respiratory tract infections	18	93	0.8
Immune & energy boosting	8	80	0.9
Diabetes	9	52	0.8
Headaches and body pain	7	80	0.9
Infant care	3	52	1.0
Animal bites	3	35	0.9
Poison	2	35	1.0
Pile/Hemorrhoids	4	70	0.9
Stroke	2	31	1.0
Low sperm count	3	48	1.0
Wounds/cuts	10	92	0.9
Typhoid/Malaria/Fever/Jaundice	29	96	0.7
Liver related diseases	4	25	0.9

Source: Field work, 2023
A taxa may fall in more than one ailment categories
Key: N_{taxa} - Number of species in each use category
N_{ur} - Number of use reports, F_{ic} - Informant consensus factor

Table 3. Fidelity Levels (FL) of most commonly used plants by key Informants

Plant Species	Therapeutic Uses	I_p	I_u	FL%
Ageratum conyzoides	Scabies	60	80	75
Phyllantus amarus schum	Gastrointestinal disorder	72	90	80
Azadirachta indica	Malaria	65	65	100
Anacardium occidentale	Cough	32	80	40
Vernonia amygdalina	Pile	66	69	95
Cylicodiscus gabunensis	Worm expeller	42	50	84
Carica papaya	Typhoid	56	72	78
Zea mays	Ulcer	15	30	50
Bridelia macrantha	Coated tongue	37	46	80
Nicotiana tabacum	Convulsion	20	50	40
Mucuna pruriens	Blood tonic	40	60	67
Alternanthera brasiliana	Skin infections	34	62	55
Jatropha curcas	Contraceptive	80	85	94
Acalypha wilkesiana Muell	Infant care	85	84	100
Basella alba	Hypertension	52	60	53
Cola laurifolia	Low sperm count	25	70	36

Source: Field work, 2023

Key: Ip - Number of informants who suggested the use of a species for the same major ailment
Iu - Total number of informants who mentioned the species for any use

Table 3 presented significant fidelity levels of over 50% for twelve plant species, indicating their importance in treating the mentioned diseases in the study area. Notably, *Azadirachtaindica* and *Acalypha wilkesiana* Muell demonstrated a fidelity level of 100% in the treatment of malaria and infant care, respectively. These high FL values highlight the exceptional preference for these species in addressing malaria and infant care conditions.

4. DISCUSSION

Ila Orangun campus of Osun State College of Education boasts a wide range of plant species, totalling 104 and belonging to 43 different families. This diverse flora signifies the presence of extensive traditional knowledge regarding medicinal plants within the community, as well as their usage in treating various ailments. More than half of the identified plant species are medicinal plants obtained from the wild, highlighting the study area's significance as a valuable source of herbal medicine for rural communities. Similar practices of utilizing tree species from forests have also been observed among rural residents in Ekiti State, Nigeria [16,17]. This study is related to the flora in Lagos State University where survey of ethnobotanical importance of plant species was conducted [8]. Similar work was done on medicinal plant species in Uganda by Tugume et al. [2] where 190 plant species belonging to 61 families were documented.

Families such as Amaranthaceae, Asteraceae, Euphorbiaceae, Lamiaceae, and Malvaceae are frequently mentioned in herbal preparations across Nigeria [9,8,18]. These families are renowned for their diverse array of bioactive compounds [2]. Among them, Asteraceae stands out for its abundance of bioactive compounds, which contributes to its extensive use in traditional medicine. Many plant species documented in the study area were found to possess multiple therapeutic uses, likely due to the presence of various metabolites and the ability of certain molecules to effectively combat different pathogens. In certain cases, combinations of plants were utilized in the preparation of herbal remedies, demonstrating the synergistic effects of these plants when used together [9].

The use of multiple parts of the same plant, such as the bark and roots of Azadirachta indica, in herbal preparations may pose a risk to the species unless sustainable harvesting practices are implemented. Leaves from various plants exhibit bioactive properties against various diseases and pathogens [19,20], suggesting the need to explore the efficacy of leaves for treating ailments where roots and barks are predominantly harvested. Herbs were the most commonly used plant life forms for medicinal purposes, and their availability throughout the year makes their collection from the wild less threatening to conservation efforts [8,21]. Shrubs, on the other hand, are preferred due to

their year-round availability and resistance to seasonal variations.

Traditional healers in the study area relied on collecting plants from the forest rather than maintaining medicinal plant gardens. However, commercial collectors requiring large volumes can exert significant pressure on plant populations, leading to overexploitation and species extinction. Oral administration was the predominant route for herbal medicine, often using solvents or additives such as water and food to enhance extraction and minimize adverse effects. Decoctions were the most common method of preparing herbal remedies, although both decoctions and cold extracts have limited shelf life, resulting in continuous harvesting of medicinal plants and potential over exploitation [2].

Certain plant species demonstrated high fidelity levels in treating specific ailments, such as *Azadirachta indica* for malaria and *Acalypha wilkesiana* Muell for infant care. The consistent preference for certain plant species across different regions and cultural groups further validates their medicinal properties. However, the limited citation of certain plants for specific ailments may be attributed to a lack of awareness, specific target groups, and limited diagnosis.

Plants with high fidelity levels are considered potential candidates for further pharmacological investigations and should be prioritized for conservation efforts [2]. The F_{ic} and FL calculations provided complementary insights into the preferred species and their traditional uses, highlighting their importance in prioritizing species for further research and conservation.

5. CONCLUSION

The number of identified plant species in the study area was higher compared to the documented 35 plant species in Lagos State University, Ojo Campus, as reported by Adu et al. [8].

Furthermore, a greater variety of plant species were utilized in the study area compared to the ones documented by Kayode and Ogunleye [14] and Adu et al. [8]. The listed plant species in the study area were slightly different from those listed by Kayode and Ogunleye [14], Adu et al. [8], and Nepal [21]. These variations in documented plant species could be due to differences in geographical locations, ecological factors, and cultural practices, which can influence the selection and utilization of medicinal plants in different regions [22,23].

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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