

## Inventory and Ethnobotanical Assessment of Plant Species in Osun State College of Education, Ila-Orangun, Osun State, Nigeria.

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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 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 month of February, 2023.

**Methodology:** Information was obtained through interviews using semi-structured questionnaires. Field excursions 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 calculated.

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### Inventory of Plant Species

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1. **Field Survey:** Conduct a thorough field survey within the college campus and surrounding areas to identify and document all plant species present.
2. **Documentation:** Record the scientific names (binomial nomenclature) and local names (if available) of each plant species observed.
3. **GPS Mapping:** Use GPS coordinates to accurately map the locations where different plant species are found. This helps in creating a comprehensive database.
4. **Collection of Specimens:** Collect herbarium specimens of each plant species for further identification and verification. These specimens should be properly pressed, dried, and mounted.
5. **Photographic Documentation:** Take photographs of each plant species, including close-ups of leaves, flowers, fruits, and any distinctive features that aid in identification.
6. **Data Management:** Organize the collected data into a systematic database that includes information such as habitat preferences, abundance, and ecological roles.

## Ethnobotanical Assessment

1. **Interviews and Surveys:** Engage with local communities, students, and staff at the college to gather information on the traditional uses of plants in the area. Document ethnobotanical knowledge related to medicinal uses, cultural practices, rituals, food sources, and other traditional uses.
2. **Documentation of Uses:** Record detailed information on the specific parts of plants used, preparation methods, dosage, and any associated beliefs or taboos.
3. **Analysis of Ethnobotanical Data:** Analyze the data collected to identify patterns in plant uses and their cultural significance. Compare findings with existing ethnobotanical literature to provide context.
4. **Community Participation:** Involve community members and local experts throughout the assessment process to ensure cultural sensitivity and accuracy in recording ethnobotanical knowledge.

## Reporting and Recommendations

1. **Report Compilation:** Compile a comprehensive report detailing the findings of the plant species inventory and ethnobotanical assessment. Include maps, tables, photographs, and descriptions to illustrate the diversity of plant species and their uses.
2. **Conservation Recommendations:** Provide recommendations for conservation and management of plant resources based on the assessment findings. Highlight species of conservation concern or those with significant cultural importance.
3. **Education and Awareness:** Suggest educational programs or initiatives within the college and local community to raise awareness about the importance of conserving plant biodiversity and traditional knowledge.
4. **Policy Implications:** Discuss potential policy implications related to the sustainable use of plant resources and the preservation of traditional knowledge among decision-makers and stakeholders.

By following these steps, a thorough inventory and ethnobotanical assessment can provide valuable insights into the plant biodiversity and cultural heritage associated with Osun State College of Education in Ila-Orangun, Osun State, Nigeria.

**Results:** A total of 104 plant species belonging to 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

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using medicinal plants. Informant consensus agreement was highest for infections which included STDs and STIs, gynecological 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.

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**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.

Key words: Ethnobotanical, Pharmacology, Homogeneity, Gynecology.

## 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

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Osun State College of Education campus in IlaOrangun, 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, IlaOrangun to produce a compendium of plant species identified in Osun State College of Education IlaOrangun and to identify among the plants the ones of high medicinal value and propose best conservative methods for the identified species.

## **2.0 MATERIAL AND METHODS**

### **2.1 Collection of plant samples**

The study was conducted in Osun State College of Education, IlaOrangun, Igbomina Region, Osun State, Nigeria. It lies on the latitude  $8.1^{\circ}$  N  $8.818^{\circ}$  S and longitude  $4.54^{\circ}$  W  $7.063^{\circ}$  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. **Figure 1** Map of IlaOrangun, 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.

### 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 [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  $I_p$  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 [ 7 ]. Descriptive statistics, including frequencies and percentages, were employed to summarize the data. Microsoft Excel 2013 was utilized for the data analysis, following the approach described by [ 8 ].

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### 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, IlaOrangun 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, Figure 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%).

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

S/N	Botanical Name	Common Name	Vernacular (Igbomina)	Family
1	<i>Abelmoschus esculentus</i>	Okra	Ilasa/Ila	Malvaceae
2	<i>Abrus precatorius</i>	Rosary pea	Ojuologbo	Fabaceae
3	<i>Acacia farnesiana</i>	Needle bush	Bonni	Leguminosae
4	<i>Acalypha wilkesiana</i> Muell Arg.	Red acalypha	Aworoso	Euphorbiaceae
5	<i>Curcuma longa</i>	Turmeric	Ataile pupa	Zingiberaceae

6	<i>Azelia Africana</i>	Mahoghany	Apa	Leguminosae
7	<i>Ageratum conyzoides</i>	Goat weed	ImiEsu	Asteraceae
8	<i>Alternantherabraziliana</i>	Brazillian weed	Rekureku	Amaranthaceae
9	<i>Alternanthera dentate</i>	Joseph's coat	Sawere	Amaranthaceae
10	<i>Amaranthushybridus</i>	Amaranthus	Tete	Amaranthaceae
11	<i>Anacardiumoccidentale</i>	Cashew	Kasu	Anacardiaceae
12	<i>Andasoniadigitata L.</i>	Baobab	Ose	Bombacaceae
13	<i>Aspilia Africana</i>	Wild sunflower	Yunyun	Compositaceae
14	<i>Azadirachtaindica</i>	Neem	Dongoyaro	Meliaceae
15	<i>Bambusa vulgaris</i>	Bamboo	Oparun	Poaceae
16	<i>Basella alba</i>	Lettuce	Amunututu	Basellaceae
17	<i>Bidenspilosa</i>	Hairy beggatrack	Laganmoyan	Asteraceae
18	<i>BlighiaSapida</i>	Ackee apple	Isin	Sapindaceae
19	<i>Brideliamacrantha</i>	Bridelia	Ira	Phyllanthaceae
20	<i>Caletropisprocera</i>	Apple of Sodom	Bomubomu	Asclepiadaceae
21	<i>Glyphaea brevis</i>	Monachino	Atori	Malvaceae
22	<i>Canthiumhorridum</i>	Basik	Biye	Rubiaceae
23	<i>Carex pendula</i>	Hanging sedge	Esun	Cyperaceae
24	<i>Carica papaya</i>	Pawpaw	Ibepe	Caricaceae
25	<i>Celosia argentea</i>	Woolflower	Sokoyokoto	Amaranthaceae
26	<i>Chromolaenaodorata</i>	Siam weed	Akintola	Asteraceae
27	<i>Chrysophyllumalbidum</i>	Africanstar apple	Agbalumo	Sapotaceae
28	<i>Citrus aurantifolia</i>	Lime	Osanwewe	Rutaceae

29	<i>Citrus reticulata</i>	Tangerine	Tangirini	Rutaceae
30	<i>Citrus sinensis</i>	Orange	Osanmimu	Rutaceae
31	<i>Cola laurifolia</i>	Laurel-leaved kola	Obi edun	Malvaceae
32	<i>Cola nitida</i>	Kolanut	Obi	Malvaceae
33	<i>Colocasia esculenta</i>	Cocoyam	Kooko	Araceae
34	<i>Combretum paniculatum</i>	Forest flame	Ekoomode	Combretaceae
35	<i>Corchorus olitorius</i>	Jew's mallow	Ewedu	Malvaceae
36	<i>Crassocephalum rubens</i>	Red flower rag leaf	Ebolo	Asteraceae
37	<i>Croton zambesicus</i>	Leave erosion	Ajekobale	Euphorbiaceae
38	<i>Cylicodiscus gabunensis</i>	African green heart	Okan	Fabaceae
39	<i>Cymbopogon giganteus</i>	Lemongrass	Korikooba	Poaceae
40	<i>Dysphania ambrosioides</i>	Wormseed	Asin	Amaranthaceae
41	<i>Elaeis guineensis</i>	Palm tree	Ope	Arecaceae
42	<i>Eleusine indica</i>	Goose grasses	Ese kannakanna	Poaceae
43	<i>Emilia sonchifolia</i>	Tassel flower	Odundun	Asteraceae
44	<i>Erythrina variegata</i>	Tigers claw	Ologun sese	Fabaceae
45	<i>Eucalyptus globulus labill</i>	Blue gum	Eucalyptus	Myrtaceae
46	<i>Eugenia uniflora</i>	Cayenne cherry	Asofeyeje	Myrtaceae
47	<i>Euphorbia heterophylla</i>	Milk weed	Emi ile	Euphorbiaceae
48	<i>Euphorbia milii</i>	Crown of thorns	Ade egun	Euphorbiaceae
49	<i>Euphorbia tithymaloides</i>	Devils backbone	Egele	Euphorbiaceae
50	<i>Ficus triangularis</i>	Fig tree	Ogori	Moraceae
51	<i>Gliciridasepium</i>	Quick stick	Agunmaniye	Papilionaceae

52	<i>Gmelinaarborea</i>	Gmelina	Igioba	Lamiaceae
53	<i>Hibiscus variegatum</i>	Hibiscus	Ewe sobo	Malvaceae
54	<i>Jatropha curcas</i>	Jatropha	Lapalapafunfun	Euphorbiaceae
55	<i>Jatropha gossypifolia</i>	Bellyache bush	Botuje pupa	Euphorbiaceae
56	<i>Jatropha multifida</i>	African toothpaste	Ogege	Euphorbiaceae
57	<i>Kalanchoetetrphylla</i>	Dessert cabbage	Eti	Crassulaceae
58	<i>Mallotussubulatus</i>	Mallotus	Pepe	Euphorbiaceae
59	<i>Mangiferaindica</i>	Mango	Mangoro	Anacardiaceae
60	<i>Manihotesculenta</i>	Cassava	Ege	Euphorbiaceae
61	<i>Margaritariadiscoidea</i>	Peacock berry	Awewe	Phyllantacea
62	<i>Melicia excels</i>	African teak	Iroko	Moraceae
63	<i>Mimosa pudica</i>	Sensitive plant	Patanmo	Fabaceae
64	<i>Mitracarpusscaber</i>	Girdle pod	Irawoile	Rubiaceae
65	<i>Momordicacharantia</i>	Bitter gourd	Ejinrin	Cucurbitaceae
66	<i>Moringaoleifera</i>	Moringa	Ewe igbale	Moringaceae
67	<i>Mucunapuriens</i>	Mucuna	Werepe	Leguminosae
68	<i>Musa sapientum</i>	Banana	Ogedewewe	Musaceae
69	<i>Nicotianatabacum</i>	Tobacco	Taba	Solanaceae
70	<i>Ocimumbasilicum</i>	Scent leaf	Efinrinwewe	Lamiaceae
71	<i>Ocimumgratissimum</i>	Tea bush	Efirin	Lamiaceae
72	<i>Passiflorafoetida</i>	Passion flower	Ododo	Passifloraceae
73	<i>Phyllantusamarusschum</i>	Stone breaker	Eyinolobe	Phyllantaceae
74	<i>Piruscommunis</i>	Pear	Pia	Poaceae

75	<i>Platyclusorientalis</i>	Oriental arborvitae	Ododo	Cupressaceae
76	<i>Polyalthialongifolia</i>	False Ashoka tree	Igunnu	Annonaceae
77	<i>Pueraria Montana</i>	Kudzu vine		Fabaceae
78	<i>Ravenalamadagariensissonn</i>	Travellers palm	Opeoyinbo	Strelitziaceae
79	<i>Senna siamea</i>	Cassia	Kassia	Caesalpiniaceae
80	<i>Sesamumindicum</i>	Sesame	Eku	Pedaliaceae
81	<i>SidaacutaBurm F.</i>	Wire weed	Olosenpetu	Malvaceae
82	<i>Solanumaethiopicum</i>	Mock tomato	Gbagba	Solanaceae
83	<i>Solanumamericanum</i>	Glossy nightshade	Odu	Solanaceae
84	<i>Solanumindicum</i>	Garden egg	Igba	Solanaceae
85	<i>Spermacoceocymoides</i>	Girdle pod	Irawoile	Rubiaceae
86	<i>Spilanthespaniculata</i>	Spot flower	Awerepepe	Asteraceae
87	<i>Spondiasmombin</i>	Hogplum	Iyeye	Anacardiaceae
88	<i>Struchiumsparaganophora</i>	Yerba De Faja	Ewurodo	Asteraceae
89	<i>Talinumtriangulare</i>	Waterleaf	Gbure	Portulacaceae
90	<i>Tamarixaphylla</i>	Tamarisk		Tamaricaceae
91	<i>Tectonagrandis</i>	Teak	Igioba	Lamiaceae
92	<i>Terminalia catappa</i>	Indian almond	Frutu	Combretaceae
93	<i>Terminalia ivorensisChev A.</i>	Black afara	Idigbo	Combretaceae
94	<i>Theobroma cacao</i>	Cocoa	Koko	Malvaceae
95	<i>Thermatococcusdanielli</i>	Praying leaf	Ewe eeran	Marantaceae
96	<i>Thunbergiaerecta</i>	Kings mantle		Acanthaceae
97	<i>Tithoniadiversifolia</i>	Mexican sunflower	Ododo	Asteraceae

98	<i>Tradescantia pallid</i>	Spiderwort		Commenlinaceae
99	<i>Tridaxprocumbens</i>	Tridax	Muwagun	Asteraceae
100	<i>Triplochitonscleroxylon</i>	African whitewood	Arere	Malvaceae
101	<i>Vernoniaamygdalina</i>	Bitter leaf	Ewuro	Asteraceae
102	<i>Viguiera dentate</i>	Golden eye	Fibasako	Asteraceae
103	<i>Zea mays</i>	Maize	Agbado	Poaceae
104	<i>Zingiberofficinale</i>	Ginger	Ata ilefunfun	Zingiberaceae

**Source: Field work, 2023**

### **3.1.2 Plant parts with medicinal value**

In the research area, leaves are primarily employed for medical purposes (Figure 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 [ 2 ] 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 [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 [ 14 ; 15; 16 ], (Figure 4).

### **3.1.4 Uses of plants collected from the site**

Figure 4 revealed that most plant species in the study area have more than one ethno botanical uses, 30% of the plant species were used for medicine and food, 25% were only consumed as food, 10% were

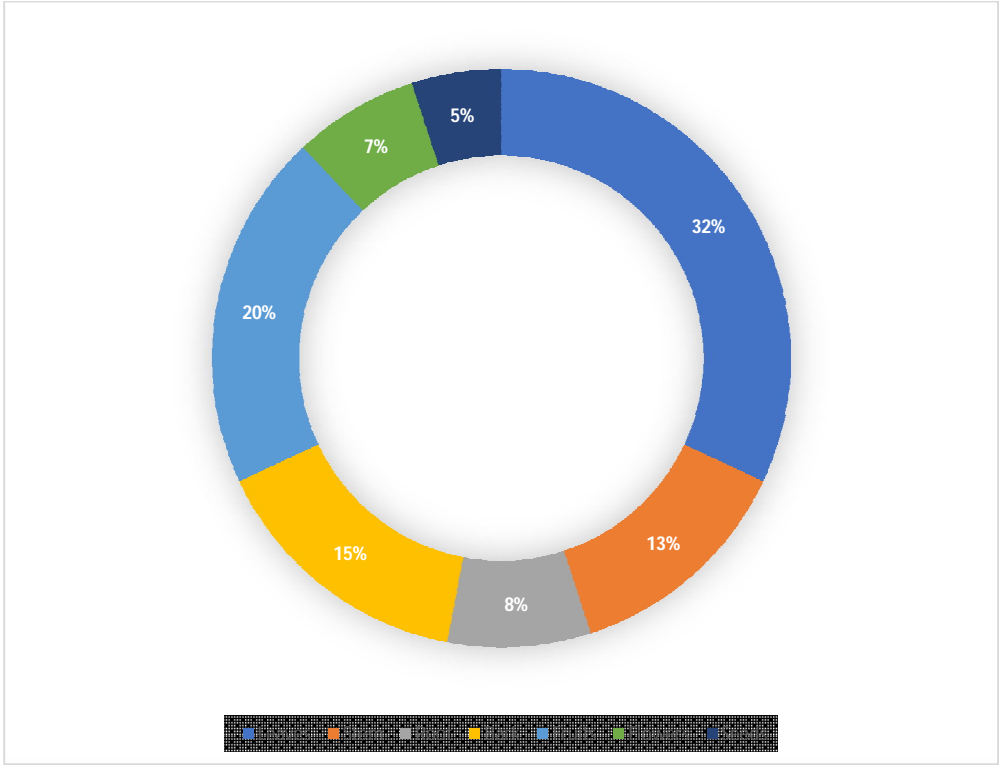
used for about four ethno botanical purposes and only few representing 2% were used for just ornamental purposes in the study area.

Figure 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 analyzed using Factor Informant Consensus and Fidelity Ratio as used by [ 2 ]. The numbers of species used to treat different ailments were revealed in figure 4.



**Fig 2:** Plants' habit distribution pattern

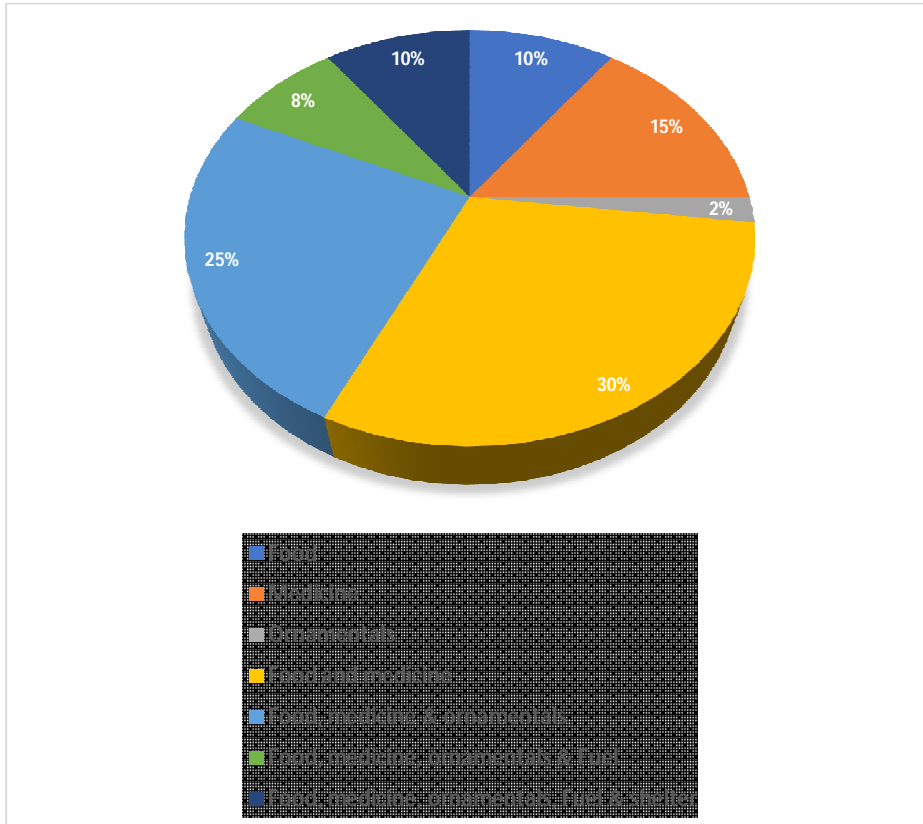
**Comment [DGAS9]:** Write down Habit and Frequency of the observed plant species



**Fig 3:** Plant parts with medicinal value

**Comment [DGAS10]:** Write down medicinal values or uses of the observed plant species

UNDER REVIEW



**Fig 4:** Uses of plants collected from the [site](#)

**Comment [DGAS11]:** Write down uses or value addition 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 *Anarcadiumoccidentale*, *Brideliamacrantha* and *Azadirachtaindica* that were used in management of eight to nine health conditions each.

On the other hand, *Moringaoleifera*, *Emilia sonchifolia*, *Sesame indicum*, *Ocimumgratissimum*, *Gliricidasepium*, *PhyllantusamarusSchum*, *Mimosapudica* and *Acacia farnesiana* were each used in management of five to six health conditions, this is related to what Tugumeet *al.*, did in Uganda [ 2 ].

### 3.1.5 Informant Consensus Agreement (F<sub>ic</sub>)

To assess the significance of each plant species in treating different ailments, Table 2 employed the Factor Informant Consensus (Fic) method, as described by [ 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*, *Acaciafarnesiana*, *Celosiaargentea* and *Thermatococcusdanielli*, for gynaecological issues (easy delivery, care during pregnancy and for winning baby) were *Cola laurifolia*, *Talinumtriangulare* and *Corchorusolitorius*, those for infant care (small baby weight, healthy baby and skin inflammation in infants) included *Acalyphawilkesiana* Muell, *Andasoniadigitata* and *Talinumtriangulare* while those for poison were *Corchorusolitorius* and *Anacardiumoccidentale*.

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  $(I_p/I_u) \times 100$ , 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.

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 *Acalyphawilkesiana* 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.

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

Ailment Category	N <sub>taxa</sub>	N <sub>ur</sub>	F <sub>ic</sub>
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:  $N_{\text{taxa}}$  - Number of species in each use category

$N_{\text{ur}}$  - Number of use reports,  $F_{\text{ic}}$  - 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%
<i>Ageratum conyzoides</i>	Scabies	60	80	75
<i>Phyllanthusamarusschum</i>	Gastrointestinal disorder	72	90	80
<i>Azadirachtaindica</i>	Malaria	65	65	100
<i>Anacardiumoccidentale</i>	Cough	32	80	40
<i>Vernoniaamygdalina</i>	Pile	66	69	95
<i>Cylicodiscusgabunensis</i>	Worm expeller	42	50	84
<i>Carica papaya</i>	Typhoid	56	72	78
<i>Zea mays</i>	Ulcer	15	30	50
<i>Brideliamacrantha</i>	Coated tongue	37	46	80
<i>Nicotianatabacum</i>	Convulsion	20	50	40
<i>Mucunapruriens</i>	Blood tonic	40	60	67
<i>Alternantherabrasiliana</i>	Skin infections	34	62	55
<i>Jatropha curcas</i>	Contraceptive	80	85	94
<i>AcalyphawilkesianaMuell</i>	Infant care	85	84	100
<i>Basella alba</i>	Hypertension	52	60	53
<i>Cola laurifolia</i>	Low sperm count	25	70	36

Source: Field work, 2023

Key:  $I_p$  - 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

## Discussion

IlaOrangun 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 [ 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.

## **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 [ 8 ].

Furthermore, a greater variety of plant species were utilized in the study area compared to the ones documented by [ 14 ] and [ 8 ]. The listed plant species in the study area were slightly different from those listed by [ 14 ], [ 8 ], and [ 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.

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