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Original Article

An Ethnobotanical Study of Plant Species Used for Medicine by the Eegun Indigenous Tribal Group of Lagos State, Nigeria

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Abstract

The ethnobotanical study of plant species used for medicine by the Egun indigenous tribal group of Lagos State, Nigeria was undertaken with a view to assess the valuable plant species in the area and their methods of preparation. In the recent time, there have been a lot of ethnobotanical studies conducted among the varying ethnic compositions in Nigeria, but a gross dearth of such studies abounds among the Eegun ethnic composition. Several communities were selected, among which 10 respondents were randomly interviewed with the aid of a semi-structured questionnaire guide. Even more, in the LGA, a major market (Badagry market), was chosen where 5 botanical vendors were interviewed on the plant parts sold. A semi-structured questionnaire matrix was used to interview the respondents. All the interviewed were focused, conversational and two-way in communication. Group interviews were conducted in each community to established group consensus on the individual responses provided. The results revealed that a total of 44 plant species, belonging to 38 families, were observed to be valued for medicine and health maintenance. The respondents' indigenous knowledge on these species revealed that diverse diseases were managed with the identified plant species. The parts of the plants used varied, as well as the methods of preparations which were simple, as well as the mode of utilization. Results obtained from the test on the abundance of the identified plant species used in the present study revealed that 7% of the identified species were very abundant, 41% were abundant, 41% were frequent, while 2% of them were rare. Adequate protection of medicinal plant resources through conservation in their natural reserves is recommended.

Keywords: ethnobotanical; medicine; plant species

Introduction

Ethnobotanical studies today are recognized as the most viable method of identifying new medicinal plant or refocusing on those reported for bioactive constituents (Ogol *et al.*, 2002). The use of plants for treating diseases is as old as human kind. Hence, this has significantly supported primary health care. All cultures from ancient times to the present day have used plants as a source of medicines. Today, as many as 80% of the world people depend on traditional medicine for their primary health care needs (WHO, 2005). This great surge of public interest in the use of plant as medicines has been based on the assumption that the plant will be available on a continual basis; unfortunately, no concerted efforts are being made to ensure this particularly in the face of the threats posed by increasing demand, a vastly increasing human population and extensive destruction of plant-rich habitats such as the tropical forests, wetlands, Mediterranean ecosystems and parts of the arid zone.

The Eegun tribe is found in Badagry Local Government, Lagos State of Nigeria. The tribe is rich in medicinal lore because of the mangrove nature of the vegetation in the area. Its high humid condition promotes rapid growth of dense vegetation in the area. The use of plants for medicinal purpose is common and widespread among the Eegun people in Badagry (Makinde *et al.*, 2015). Knowledge of traditional medicine is being passed by oral traditions from one generation to another among the indigenes.

In the recent time, there have been a lot of ethnobotanical studies conducted among the varying ethnic compositions in Nigeria, but a gross dearth of such studies abounds among the Eegun ethnic composition. Thus, the present study aimed at assessing the plant species that are valued for use as medicine by the Egun people at Badagry creek, Lagos State, Nigeria.

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Materials and Methods

The study area

Badagry, the study area, is a coastal town in Badagry Local Government Area (LGA) in Lagos State, Nigeria. It is located between the city of Lagos and Seme, the border town of Benin Republic. According to the 2006 census, the municipality had a total population of 237,731 and covered 442,993 km^2 area. The Badagry creek is located on latitude 2.42' and 3.2' E and between longitude 6.23 and 6.28'N, and forms part of the continuous lagoon that stretches from port Novo to Lagos.

The climate is dominated by heavy rain season which last from April to October. The soil in Badagry is lightly grey sandy type with vegetation over the low lying plains and marshes near the lagoons and creeks. The vegetation is made up of woody plant, shrubs and oil palm trees in the sandy areas, while the marshy areas are covered by mangrove. The mean monthly temperature fluctuates around 30 °C. The relative humidity is high throughout the year and may not be less than 70-80% around Lagos and other lagoons and seaside locations (Abegunde, 2002) (Figs. 1-2).

Methodology

In Badagry Local government area, five rural communities were selected randomly for the study. These communities were Aivoji, Ajido, Gbaji, Sakpo and Sito. In each community, 10 respondents were randomly selected and interviewed with the aid of a semi-structured questionnaire guide. Also, in the LGA, a major market (Badagry market) where 5 botanical vendors were interviewed on the plant parts sold in the market.

A semi-structured questionnaire matrix was used to interview the respondents, which were focused, conversational and two- way in communication. Plant species whose parts where valued for folk medicine were identified. The diseases they cure and /or prevent were identified, as well as plants' mode of administration. Similarly, medicinal plant vendors, group of respondents and key informants where identified and interviewed as stated by Adedeji *et al.* (2018).

The index of wealth used to classify the economic status of respondents was based on the cumulative economic returns from the assets and production of the respondents. Hence, respondents were classified into resource-poor and resource-rich.

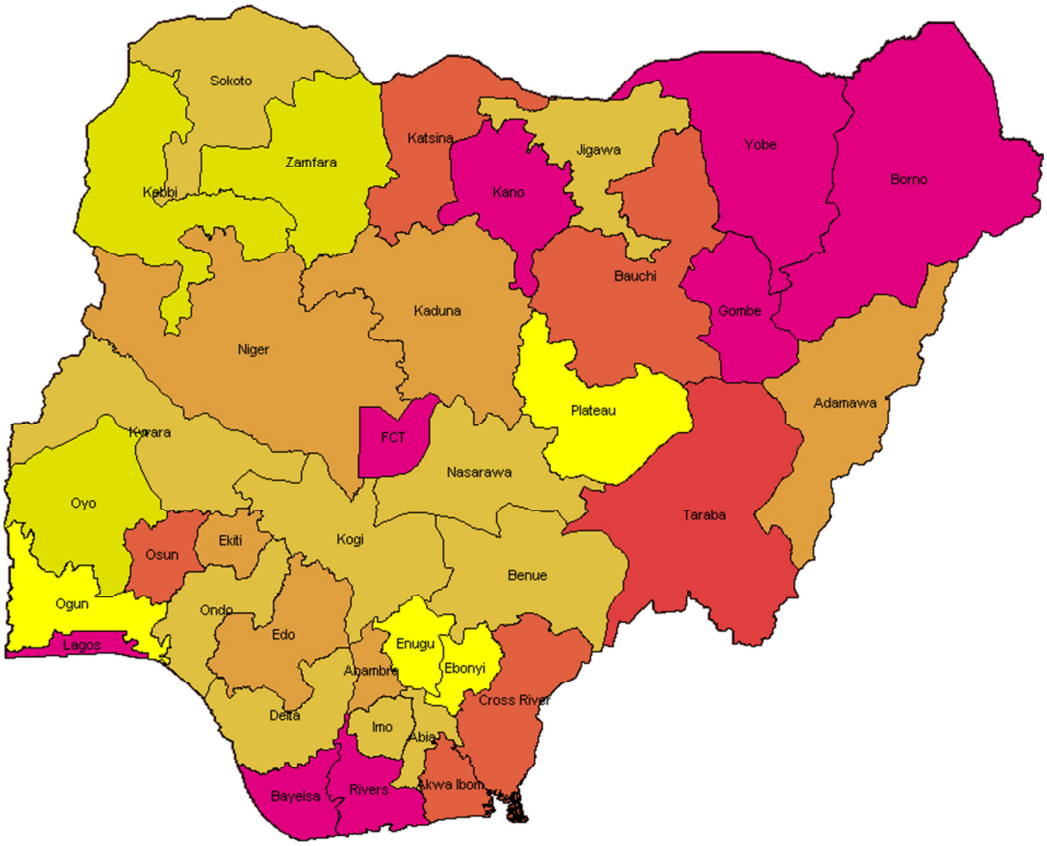

Fig. 1. Map of Nigeria showing Lagos State, Nigeria

Fig. 2. Map of Lagos State showing Badagry Creek

Group interviews were conducted in each community to established group consensus on the individual responses provided. Key informants consisting of health, forestry and community development officers were identified in each community and interviewed. The botanicals were collected, identified and voucher specimens were kept in the Departments' herbarium.

Results

Table 1 revealed that the herbal vendors, their clients and resident's respondents transcend sex, age and literacy status, though most of them were females (60% among vendors, 70% among clients), adults of ages between 20-50 years (60% of both vendors and clients, respectively) and illiterates (35%). Field observation revealed that the Eegun people have knowledge of the medicinal values of plants around their environment. The indigenous ethno-botanical knowledge was not documented and the act of transmitting such data from one generation to another is declining.

Trading in medicinal plants is now prominent in the study area and was dominated by females who sourced their stocks from diverse areas within and outside the study area. Field observation further revealed that medicinal plants vendors in the study area could be classified as wholesale and retail vendors. Indigenous knowledge on the composition and prescriptions of the plant derived medicine are now learnt as profession. Thus vendors are now practitioners that attend to numerous patents on daily basis. Various plant parts constituted the ingredients for the plant derived medicine.

A total of 44 plant species, belonging to 38 families, were observed to be valued for medicine and health maintenance (Table 2). While 5 of these species where members of the family Rutaceae, 4 were Annonaceae, 3 were members of the families Anacardiaceae, Asteraceae, Poacea and Rubiaceae. The families Amaranthaceae, Apocynaceae, Asteraceae, Caesapiniaceae, Clusiaceae, Combretaceae, Cucurbitaceae, Euphorbiaceae, Meliaceae and Piperaceae have 2 members each, while other families possess one member each.

Secondary information used in the study revealed the phytochemical constituents present in each of the identified plant species (Table 3). The respondents' indigenous knowledge on these species revealed that diverse diseases were managed with the identified plant species (Table 4).

The parts of the plants used varied. The whole plants of 43% of the identified species were valued for use as medicine (Table 4), 16% of the leaves only, 14% of roots only, 11% of combined leaves and stems, 7% of combined roots and stems and 2% each of flowers only, seeds only, stems only and combines flowers, seeds and leaves were equally valued for medicine.

The methods of preparations were simple and easy to accomplish. The responses (Table 5) revealed that 48% of the plant-based medicines were prepared by boiling the identified plant parts in water, 30% by infusion, 18% by combined infusion and decoction methods and 5% by blending. The mode of utilization of the plant-derived medicines varied also, it was observed that 84% of the plant based medicine was utilized by oral administration only, 9% by bathing only and 7% by both bathing and oral administration.

Table 1. Socio-economic classification of respondents sampled in Badagry Local Government area of Lagos State

Feature	Description	Proportion (%) of respondents		
		Herbal vendor	Clients and Resident	Average, Total
Sex	Male	20	30	25
	Female	80	70	75
Age	< 20yrs	0	10	5
	20 - 50yrs	60	60	60
	> 50yrs	40	30	35
Literacy	Literate	60	70	65
	Illiterate	40	30	35
Economic status	Resource Rich	40	50	45
	Resource Poor	60	50	55
Occupation	Agricultural	70	80	75
	Non – Agricultural	30	20	25

Table 2. Identified plant species valued for medicine in Badagry Local Government area of Lagos State

S/N	Scientific name	Local name	Family
1	*Allophylus africanus*	Alloviatan	Sapindaceae
2	*Amaranthus cruentus*	Dido beko	Amaranthaceae
3	*Amaranthus spinosus*	Oma	Amaranthaceae
4	*Annona muricata*	Sharp sharp	Annonaceae
5	*Annona senegalensis*	Azun	Annonaceae
6	*Anthrocleista djalonesis*	Gusuetin	Logariaceae
7	*Argemone mexicana*	Dediyo	Papaveraceae
8	*Calendula officianalis*	Aduko	Asteraceae
9	*Calotropis procera(wild)*	Awirikomi	Apocynaceae
10	*Carica papaya*	Gbantee	Caricaceae
11	*Chrysophylum alibidum*	Azanti	Sapotaceae
12	*Cistrus media*	Kretin	Rutaceae
13	*Citrus aurantifolia*	Yovosan kere	Rutaceae
14	*Citrus aurantum*	Zingbo	Rutaceae
15	*Citrus sinensis*	Yovosan	Rutaceae
16	*Cola acuminate*	Avitin	Sterculiaceae
17	*Corchnus olitorus*	Nehun	Malvaceae
18	*Corpolobia lutea*	Aviantin	Polygalaceae
19	*Cretera adansonii*	Wotozinzen	Capparaceae
20	*Cymbopogon citrates*	Tin maa	Poaceae
21	*Desmodium gangeticum*	Wovonekun	Myrtaceae
22	*Dialium guineense*	Asisoyetin	Fabaceae
23	*Diospyros monbuttensis*	a) Adama; b)Egungun eja	Ebenaceae
24	*Gossypium barbademces*	Sekanfuntin	Malvaceae
25	*Helianthus annus*	Haiyohaiyo	Asteraceae
26	*Hordeum vulgare*	a) Isapo b)Igotu	Poaceae
27	*Irvingia gabonensis*	Asiyan	Irvingiaceae
28	*Jatropha curcas*	Nigbapotin	Euphorbiaceae
29	*Kigelia africana*	Ayanpon	Bignoniaceae
30	*Landolphia dulcis*	Kavotoetin	Apocynaceae
31	*Lawsonia inermis*	Laritin	Lythraceae
32	*Melia azearach*	Keketum	Meliaceae
33	*Ocimum graticimum*	Chama dido	Labiatae
34	*Psidium guajava*	Kekun kekuntin	Myrtaceae
35	*Rauvolfia vomitori*	Lema	Apocynaceae
36	*Rhoicissus tridemtata*	a) Aviaba b)Viporonba	Vitaceae
37	*Saccharum officinarum*	Tetere gungun	Poaceae
38	*Sena alata*	Ahinma	Caesalpinaceae
39	*Strophantus hispidus*	Dikuyintin	Apocynaceae
40	*Synsepalum dulcificum*	Ayiyere	Sapotaceae
41	*Tephrosea purpurea*	Fiyo	Fabaceae
42	*Thaumatococcus Danielle*	a.Aba b.Afremo	Maranthaceae
43	*Vernonia amygdalina*	Aloma	Asteraceae
44	*Zinagiber officinale*	Ata ile	Zingiberaceae

Table 3. Phytochemical constituents present in the identified plant species used as medicine

S/N	Local name	Scientific name	Phytochemicals
1	Alloviatan	*Allophylus africanus*	Anthraquinones, carbohydrates, flavonoids, phenols, saponins, tannins. Oladosu *et al.*, 2013
2	Dido beko	*Amaranthus cruentus*	Cardenoids, carotenoids, saponins, flavonoids, iridoids, steroids, triterpenes, polyphenols, tannins. Fernand *et al.*, 2012
3	Oma	*Amaranthus spinosus*	Carbohydrate, cardiac glycosides, flavonoids, phenol, protein, saponins. Khanal *et al.*, 2014
4	Sharp sharp	*Annona muricata*	Alkaloids, cardiac glycosides, flavonoids, reducing sugar, saponins, tannins, triterpenoids. Usunmobun *et al.*, 2014
5	Azun	*Annona senegalensis*	Alkaloids, cardiac glycosides, glycoside, flavonoid, saponins, steroid, tannins, volatile oil. Idayat *et al.*, 2014.
6	Gusuetin	*Anthocleista djalonensis*	Alkaloids, flavonoids, saponins, inulins, reducing sugar, tannins, phlobatannins, steroids. Luter *et al.*, 2012
7	Dediyo	*Argemone mexicana*	Alkaloids, amino acids, anthraquinones, cardiac glycosides, fatty acids, flavonoids, phenols, steroids, tannins, terpenoids. Mergu *et al.*, 2017, Apurba *et al.*, 2012.
8	Aduko	*Calendula officianalis*	Amino acids, carbohydrates, fatty acids, flavonoids, saponins, sterols, tannins, triterpenoids, phenols. Chakraborthy, 2010
9	Awirikomi	*Calotropis procera*	Alkaloids, cardiac glycoside, flavonoid, saponin, tannins, phenols. Akindele *et al.*, 2017
10	Gbantee	*Carica papaya*	Alkaloids, flavonoids, glycoside, quinones, tannins. Ikeyi *et al.*, 2013
11	Azanti	*Chrysophylum alibidum*	Alkaloids, cardiac glycoside, flavonoid, saponin, tannins, phenols. Okoli *et al.*, 2010
12	Kretin	*Citrus medica*	Alkaloids, carbohydrates, flavonoids, glycosides, phenols, steroids. Kalpesh *et al.*, 2012
13	Yovosan kere	*Citrus aurantifolia*	Anthraquinones, phenolic compounds, saponins. Emad, 2016
14	Zingbo	*Citrus aurantium*	Alkaloids, flavonoids, glycoside, phenol, saponins, steroid, tannins, terpenoids. Khudhair *et al.*, 2017
15	Yovosan	*Citrus sinensis*	Alkaloids, cardiac glycosides, saponins, tannins, terpenoids. Mamta *et al.*, 2013
16	Avitin	*Cola acuminate*	Alkaloids, anthraquinones, cardiac glycoside, saponins, steroids, tannins, volatile oils. Kanoma *et al.*, 2014
17	Nehun	*Corchorus olitorus*	Alkaloids, flavonoids, saponins, tannins. Sanjida *et al.*, 2015
18	Aviantin	*Carpolobia lutea*	Anthraquinones, cardiac glycosides, flavonoids, saponins, simple sugar, terpenes. Ette *et al.*, 2014
19	Wotozinzen	*Crateva adansoni*	Alkaloids, carbohydrate, flavonoids, saponins, steroids, tannins, terpenoids
20	Tin maa	*Cymbopogon citrates*	Carbohydrates, flavonoids, phenols, tannins, volatile oil. Ewansiha *et al.*, 2012
21	Wovonekun, Zedari	*Desmodium gangeticum*	Alkaloids, carbohydrates, flavonoids, glycosides, phenols, saponins. Niranjan *et al.*, 2008
22	Asisoyetin	*Dialium guineense*	Alkaloids, flavonoids, glycosides, saponins, tannins. Ajiboye *et al.*, 2015
23	a) Adama b)Egungun eja	*Diospyros monbuttensis*	Alkaloids, anthraquinones, anthocyanins, coumarins, polyphenols, polyterpene, saponins, sterolds, sterols, quinones. Tuo *et al.*, 2015
24	Sekanfuntin	*Gossypium barbademces*	Alkaloids, cyanogenic glycosides, flavonoids, saponins, phenolics. Muhammad *et al.*, 2014
25	Haiyohaiyo	*Helianthus annus*	Alkaloids, carbohydrates, flavonoids, steroids, triterpenoids. Rubab *et al.*, 2016
26	a) Isapo b)Igotu	*Hordeum vulgare*	Alkaloids, flavonoids, fat, glycoside, saponins, phytosterol, protein, reducing sugar, starch, tannins. Kumara *et al.*, 2015
27	Asiyan	*Irvingia gabonensis*	Cardiac glycosides, carbohydrates, flavonoids, saponins, steroids, tannins. Efosa *et al.*, 2016
28	Nigbapotin	*Jatropha curcas*	Alkaloids, carbohydrates, flavonoids, glycoside, flavonoid, protein, saponins, sterols, tannins, triterpenoids. Ahirrao *et al.*, 2011
29	Ayanpon	*Kigelia Africana*	Alkaloids, flavonoids, glycoside, phenolic compound, reducing sugar, tannins. Abdulkadir *et al.*, 2015
30	Kavotoetin	*Landolphia dulcis*	Alkaloids, flavonoids, glycosides, phenols, saponins, steroids, tannis. Ramesa *et al.*, 2016
31	Laritin	*Lawsonia inermis*	Alkaloids, glycosides, saponins, tannins, quinones. Khaled *et al.*, 2016
32	Keketum	*Melia azedarach*	Alkaloids, anthraquinones cyanogenic glycoside, flavonoids, phenols, saponins. Muhammad *et al.*, 2017
33	Chama dido	*Ocimum graticimum*	Alkaloids, flavonoids, glycosides, saponins, steroids, tannins, terpenoids, phylobatannins. Priscilla, 2016
34	Kekun kekuntin	*Psidium guajava*	Alkaloids, carbohydrates, flavonoids, saponins, sterols, tannins. Vikrant *et al.*, 2012
35	Lema	*Rauvolfia vomitoria*	Alkaloids, cardiac glycoside, flavonoids, saponin, steroid, terpenoid. Olajumoke *et al.*, 2012
36	a)Aviaba b)Viporonba	*Rhoicissus tridentate*	Alkaloids, flavonoids, phenols, saponins, tannins, terpenoid. Mwangi *et al.*, 2015
37	Tetere gungun	*Saccharum officinarum*	Alkaloids, hydrogen cyanide, flavonoids, saponins, tannins. Human *et al.*, 2016
38	Ahinma	*Sena alata*	Alkaloids, anthraquinones, carbohydrates, cardiac glycosides, phylobatannins, protein, saponins. Karthika *et al.*, 2016
39	Dikuyintin	*Strophantus hispidus*	Anthraquinone, cardiac glycosides, flavonoids, tannins, terpenoids. Ayoola *et al.*, 2008
40	Ayiyere	*Synsepalum dulcificum*	Alkaloids, flavonoids, cardiac glycosides, polyphenols, tannins, saponin. Osabar *et al.*, 2016
41	Fiyo	*Tephrosea purpurea*	Alkaloids, cardiac glycosides, flavonoids, resins, steroids, tannins, phenols, quinone. Suriyavathana *et al.*, 2014
42	a.Aba b.Afremo	*Thaumatococcus Danielle*	Alkaloids, cardiac glycosides, flavonoids, phylobatannins, saponins, tannins, terpenoids. Shalom *et al* ., 2014
43	Aloma	*Vernonia amygdalina*	Alkaloids, flavonoids, glycosides, phenols, reducing sugar, saponins, terpenoids. Ifeanyi *et al.*, 2016
44	Ata ile	*Zingiber officinale*	Alkaloids, cardiac glycoside, flavonoids, reducing sugars, saponins, polyphenols. Osabor *et al.*, 2015

Table 4. Parts used for medicine in the identified plant species in Badagry Local Government, Lagos State

Parts Used	Identified species
Flowers	*C. officinalis*. Proportion: 2%
Seeds	*I.gaboneensis*. Proportion: 2%
Leaves	*H. vulgare, T. danielle, C. citratus, C. adansoni, S. dulcificum, A. africanus, C. olitorus.* Proportion: 16%
Stems	*S. officinarum*. Proportion: 2%
Roots	*Z. officinale, D. guineense, R. vomitoria, L. inermis, O. graticimum, V. amygdalina* Proportion: 14%
Roots and Stems	*R. tridentate, C. procera, C. albidum.* Proportion: 7%
Flowers, Seeds & Leaves	*H. annus*. Proportion: 2%
Leaves & Roots	*T. purpurea, C. papaya, A. muricata, S. hispidus, A. spinosus*. Proportion: 11%
Whole plant	*A.segalensis, P. guajava, D. monbuttensis, A. cruentus, S. alata, M. azedarach, J. curcas, K. africana, C. medica, C. lutea, C. acuminate, L. dulcis, G. barbademces, A. Mexicana, D. gangeticum, C. sinensis, C. aurantifolia.* Proportion: 43%

Table 5. Diseases cured, methods of preparations and utilizations of plant medicines obtainable from the identified plant species in Badagry Local Government, Lagos State

S/N	Species	Diseases cured	Methods of preparation	Administration/utilization
1	*Helianthus annus*	Kidney infections, skin infections, high fevers	Infusion of the leaves; the seeds are crushed to get the oil	Oral administration, the extract oil of the seeds are applied on skin surface
2	*Rhoicissus tridentate*	a) Prevent abortion b)Cures fibroid	Decoction and infusion of the root and stem bark	Oral administration
3	*Annona senegalensis*	Convulsion, epilepsy	Barks decoction	Oral administration
4	*Hordeum vulgare*	Weakness, lack of shape or vigor in children	Boil in water	The water extract is used to bathe the children
5	*Psidium guajava*	Obesity	Decoction in water	Oral administration
6	*Diospyros monbuttensis*	Chicken pox, fever, feeling pain	Decoction or infusion Boil in water	Extract is used to bathe
7	*Calotropis procera*	Fever	Stem and root are rinsed and infused	Chewed orally
8	*Tephrosea purpurea*	Weakness, stomach problem	Decoction of leaves in water; infusion of the root	The extract is used to bathe for children
9	*Carica papaya*	Malarial, typhoid fever	Decoction in water	Oral administration
10	*Saccharum officinarum*	Urinary tract infection	Cut the stem pulp and infused in water	The stem pulp is being chewed
11	*Zingiber officinale*	Migraine, gastro intestinal tract disease, high blood pressure, weight loss	Infusion of the root	The extract of the root is taken orally
12	*Thaumatococcus Danielle*	Malarial, fever	Root can be blended	Oral administration
13	*Chrysophylum alibidum*	Yellow fever, malaria skin infection, gonorrhea, urinary tract infections	Root and stem decoction	Oral administration of the bark extract
14	*Amarantus cruentus*	Prevention of abortion	Decoction of various shape of the leaves	The extract of the leaves is taken orally
15	*Irvingia gabonensis*	Diabetes, heart disease, anemia	Cooking of seeds and eating the fruit raw	Oral administration
16	*Sena alata*	Fever, stomach ulcer and pain	Decoction in water	Oral administration
17	*Annona muricata*	Rheumatism, diabetes, eczema, boils	Infusion of the bark in alcohol; decoction of the leaves	Oral administration
18	*Calendula officianalis*	Children's fever, skin infection	The flowers are dried, blend into powder	Apply unto the surface infected or bath with the water extract
19	*Cymbopogon citrates*	Malaria, high blood pressure, diarrhea, fever	Decoction of the leaves	Oral administration; the extract is used to bathe
20	*Synsepalum dulcificum*	Asthma, diabetes, weight loss, cancer	Decoction of the leaves	Oral administration
21	*Melia azedarach*	Asthma, weakness, headache, diarrhea, nervous disorder	Decoction of leaves, stem, and root bark	Oral administration
22	*Jatropha curcas*	Asthma, malaria fever, eczema	Decoction of the root or infusion of the leaves	The stem is chewed; oral administration of the plant extract
23	*Dialium guineense*	Cough, stomatitis, asthma & toothache	Infusion	Oral administration
24	*Rauvolfia vomitoria*	Asthma, diarrhea, rheumatism, jaundice	Infusion of the bark	Oral administration
25	*Kigelia africana*	Obesity, digestive disorder, constipation, veneral diseases, rheumatism	Decoction	Oral administration; plant extract is applied externally to rheumatic joint

26	*Citrus aurantium*	Obesity, typhoid fever	Infusion	Oral administration
27	*Cretera adansoni*	Stomach troubles, syphilis, obesity	Decoction of the bark In lime juice	Oral administration of the plant extract; the powdered bark is applied to the swollen part of the body
28	*Strophantus hispidus*	Conjunctivitis, obesity, fever, skin disease, leprosy and rheumatic infections	Root infusion in lime juice; decoction of leaves and bark	Oral administration of the plant extract
29	*Anthrocleista djalonesis*	Intestinal problems, malaria, jaundice, skin infections, hernia	Decoction of the plant parts.	Oral administration
30	*Desmodium gangeticum*	Rheumatism, pain, diabetes, chronic fever, diarrhea, asthma, dysentery	Infusion of the plant parts.	Oral administration
31	*Citrus medica*	Diabetes, scurvy, kidney stone disease	Infusion	Oral administration of the fruit juice and plant extract
32	*Carpolobia lutea*	Male infertility	Infusion of the root and plant part in alcohol	Oral administration
33	*Cola acuminate*	Stomach ulcer, piles, male infertility, dysentery, diarrhea	Infusion of the plant part	Oral administration of the plant extract; the nut is chewed raw
34	*Allophylus africamus*	Fever, male infertility, diarrhea, pile, venereal diseases	Decoction in water or pap broth	Oral administration
35	*Landolphia dulcis*	Female infertility, arthritis, sore and kidney pains.	Decoction of the plant barks and the leaves	Oral administration
36	*Gossypium barbademces*	Female infertility, typhoid fever, high blood pressure	Decoction of the plant parts	Oral administration
37	*Argemone mexicana*	Skin infections, Female infertility and leprosy	Decoction of the plant barks	Oral administration
38	*Citrus sinensis*	Fever, catarrh, asthma, high blood pressure and liver ailment	Decoction of the plant	Oral administration of the plant extract
39	*Citrus aurantifolia*	Diabetes, weight loss, scurvy	Decoction of the plant parts	Oral administration
40	*Amarantus spinosus*	Gonorrhea, eczema, haemorroids	Decoction of the roots and leaves; the plant is also burnt to ashes.	The plant extract is taken orally, and the plant ashes is used to wash sores
41	*Corchrus olitorus*	Diabetes, aches and pains, dysentery, fever, piles, gonorrhea	Leaves are cooked as vegetables; cold infusion of the leaves	Oral administration of the extract and the leaves are eaten when cooked
42	*Lawsonia inermis*	Malaria &fever, dysentery, diarrhea, sore throat, liver problems, toothache	Decoction of the bark; infusion of the leaves	Oral administration
43	*Ocimum graticimum*	Fever, diarrhea, colds, impotence, dysentery and rheumatism	Infusion of plant parts in water, the leaves are squeezed in water to get the leaf extract	Oral administration
44	*Vernonia amygdalina*	Malarial, fever, diarrhea, dysentery, hepatitis and cough	Infusion of the plant parts in water	Oral administration

Table 6. Abundance of the identified plant species in Badagry Local Government Area, Lagos State, Nigeria

Availability status	Identified species
Very abundant	*T. purpurea, A. spinosus, O. graticimum* Proportion: 7%
Abundant	*H. annus, P. guajava, D. monbuttensis, C. papaya, S. officinarum, T. danielle, A. cruentus, S. alata, C. officinalis, C. citratus, S. dulcificum, J. curcas, G. barbademces, A. mexicana, C. sinensis, C. aurantifolia, C. olitrus, V. amygdalina.* Proportion: 41%
Frequent	*R. tridentata, A. senegalensis, H. vulgare, C. procera, Z. officinale, C. albidum, I. gaboneensis, A. muricata, M. azedarach, D. guineese, R. vomitoria, K. africana, C. aurantium, C. adansoni, S. hispidus, A. djalonensis, D. gangeticum, C. medica, C. acuminate, A. africanus, L. dulcis, L. inermis* Proportion: 41%
Rare	*C. lutea*. Proportion: 2%

Table 7. Habits of the identified plant species used for medicinal use

Habit	Identified species
Trees	*D. monbuttensis, C. albidum, I. gaboneensis, A. muricata, M. azedarach, R. vomitoria, K. africana, C. aurantium, C. adansoni, A. djalonensis, C. medica, C. acuminate, C. sinensis, C. aurantifolia* Proportion: 32%
Shrubs	*R. tridentate, A. senegalensis, P. guajava, C. procera, T. purpurea, S. alata, S. dulcificum, D. guineensis, S. hispidus, C. lutea, A. africanus, L. dulcis, G. barbademces, L. inermis, O. graticimum, V. amygdalina.* Proportion: 39%
Herbs	*H. annus, H. vulgare, C. papaya, S. officinarum, Z. officinale, T. danielle, A.cruentus, C. officinalis, C. citratus, J. curcas, A. mexicana, A. spinosus, C. olitorus.* Proportion: 30%

Results obtained from the test on the abundance of the identified plant species used in the study (Table 6) revealed that 7% of the identified species were very abundant, 41% were abundant, and 41% were frequent, while 2% of them were rare. Table 7shows the habit of the plant species: 32%, 39% and 30% of the identified species were trees, shrubs and herbs respectively.

Discussion

The study revealed that Eegun, like other tribes in Nigeria (Kayode *et al*., 2017), still valued the use of plants for health maintenance and management. Medicinal plants are increasingly recognized worldwide as an alternative source of efficacious and inexpensive medications to synthetic chemo-therapeutic compound (Omogbadegun *et al*., 2011). Field observation shows that indigenous knowledge on these plants is been passed to the younger generation (Table 1) and the varying socio-economic classification of the respondents does not serve as pre-requisites to this transmission. The trading and apprenticeship in medicinal plants observed in the present study tends to suggest that dependence on the use of medicinal plants will be sustained in the study area. Previous study by Ekanem and Udoh (2009) asserted that plants now constitute a major economic resource of most countries of the world including Nigeria.

The intimate consciousness demonstrated by respondents on the medicinal values of the identified species in the study area is further buttressed by the results obtained from the secondary sources that the identified species were rich in phytochemicals (Tables 2 and 3). Ayoola *et al*. (2008) asserted that these phytochemicals have beneficial effects on health and play active roles in amelioration of diseases. The diversity in the parts of the identified plant valued for medicine tends to lend credence to the assertion of Osabor *et al*. (2016) that varying quantities of the phytochemicals abounds in the plant parts. Similarly, diversity abounds in such plants species, diseases managed by the plants and the methods of administration of the plant medicine in this study. Field observation revealed that quite often, only the medicinal ingredients (the plant parts) are obtained from the vendors in the markets, while the client prepares the medicine. The methods of preparations were simple without any technology involved. Kayode and Odesola (2017) made similar observation and asserted that this constitutes positive incentive to the preference for plant medicine and the cheap cost of the plant medicine. Also, Makinde *et al*. (2015) observed that many herbal vendors, trado-medical practitioners have Western education with background in diverse disciplines. Many undergo tutelage as apprentice for several months and some attended conferences and workshops. All these have resulted in better preparations, packaging and thus the efficacies of the plant medicines in the recent times.

Most of the identified plant species were presently 'frequent' on the abundance scale used in the current study (Table 7) with 2% of the species already attained the 'rare' status. Most of the species were shrubs and trees. Thus, with the parts of the plants used including whole plants, roots, stems, barks, leaves, flowers, fruits and seeds, as well as the increase awareness and preference for plant derived medicine coupled with rapidly developing industrialization and conversion of vegetation to housing and other economic activities in the study area, the need for conservation (Kayode *et al*., 2015) of most of the identified species cannot be over-emphasized.

Conclusions

Conservation ensures the availability and sustainability of the identified species for the present and future generations of the inhabitants of the study area. It is therefore necessary to preserve the plant diversity of the vegetation of the study area. Some of the wild medicinal plants should be domesticated. Similarly, sustainable harvesting techniques should be practiced. Part of the existing vegetation in the study area should be constituted as botanical gardens so that adequate protection of medicinal plant resources through conventional conservation in their natural reserves could be attained.

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