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Ethnobiological survey of indigenous flora used for management of catarrh and arthritis in Abeokuta

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Abstract: Survey of plants used for management of catarrh and arthritis in Abeokuta was conducted. A total of forty four plants belonging to 28 families were collated as being used for management of catarrh and arthritis**.** Annonaceae, euphorbiaceae, zingiberraceae and solanaceae were the most frequent plant families mentioned. *Moringa oleifera* (20.45%), *Vernonia amygdalina* (18.18%), *Occimum gratissimum* (15.91%), *Crinum jagus* (15.91%), *Milicia excels* (15.91%), *Ricinus communis* (15.91%), *Pettveria alliaceae* (15.91%), *Cybopogon citratus* (15.91%), *Euphorbia hirta* (13.64%), *Tetrapleura tetraptera* (13.63%) and *Terminalia ivorensis* (13.64%) were the most frequent mentioned plants. 56.82% of plants were used as leaves, 6.82% as bulbs, 22.27% as leaves, stem, root, leaves, stem-bark, roots and seeds, 4.55% as rhizomes while whole parts of 20.45% of the plants were used for catarrh and arthritis herbal preparations. 75.00% of the plants were reported being used when they were freshly collected while 25.00% were being used both when they were freshly collected and in dry form. The most commonly employed solvents were water, hot pap, local gin, lime water and oil palm as represented by 84.09%, 2.27%, 6.82%, 2.27%, and 4.55%. Infusion (4.55%), decoction (54.55%), powder (4.55%), paste (25.00%), poultice (9. 09%) and chewing (2.27%) were reported for catarrh and arthritis

herbal preparation methods. Largest percentage of the plants (72.73%) was cultivated at home garden and also available at various markets in the study area while 22.79% were found mainly in the forests.

Key words; catarrh, arthritis, ethnobotanical, Traditional herbal practitioners, herbal preparation

INTRODUCTION

The discovery of plants for medicinal purpose to humans has a long antecedent history extending back to old civilizations [1, 2]. Many indigenous drugs are obtained from medicinal flora and have been used in health delivery of common man[3]. No doubt the poor communities across the globe, trust medicinally valuable plants both for treatment of human and animal ailments. In most instances, certain plant species are considered specific for a particular ailment and others have multiple uses, but occasionally they have mixed usage[4]. The demand for medicinal plants is rising day by day in the developed and underdeveloped states of the world due to unsatisfactory performance and high costs of modern medicines.

Despite technological advancement in pharmacological researches and proliferation of medical centres, catarrh and arthritis remain chronic disorder of both young and old. Most rural areas are starved of medical facilities as physicians are unwilling to live and work in rural areas. Most rural medical centres have no medical doctors and those stationed there visit the hospitals only once or twice a week for medical consultations. In addition, many rural duelers are indigenes, poor and cannot afford the high cost of orthodox medicines. Sorungbe *et al.*[5] reported that only 39% of the rural communities had been accessed. Furthermore, expensive medical equipment could not be purchased and the few available ones had no expertise operators. Due to these challenges, many people are at the risk of arthritis, catarrh and other diseases. To redress the alarming rate of this epidemic situation, traditional medicine is the readily alternative source of medicaments for 80 percent of the people because of its affordability, reliability and availability[6].

Also, with the current trends of the high depletion of tropical forest resources, little is known about most of the world's plant species especially, African tropical rainforest flora used as remedies for these diseases, it is necessary that inventories of plants with therapeutic value are carried out and the knowledge related to their use is documented in systematic studies. Hence, this study aimed to survey and document the medicinal flora of Abeokuta, Nigeria used to treat catarrh and arthritis.

MATERIALS AND METHODS

Study Area: Abeokuta is the capital of Ogun state and traditionally home of Egbas. It is stratified into Abeokuta North and Abeokuta South Local Government Areas. The Egbas have been traditionally divided into four (4) namely; Egba Ake, Oke-Ona,Gbagura and Owu. Three types of religion are widely practiced by the people. The religions include Christianity, Islam and traditional religion. Christianity is the predominant religion[7]. Geographically, Abeokuta lies on latitude 7°15N and longitude 3°25E. The town is about 81 km south-west of Ibadan, the Oyo State capital and 106km North of Lagos, former Nigerian capital city. Abeokuta has humid weather with an average temperature of about 27.4° C and an

annual rainfall of 128 cm in the southern part of the city and 105 cm in Northern part. The Ogun river transverses through the town from the South to the western part.

Methodology of the study: The study was carried out in the following stages:

Stage 1: Collection and review of published and unpublished literatures on ethno botanical survey of

Forest plants used for management of catarrh and arthtis in Abeokuta, Ogun State, Nigeria

Stage 2: Questionnaire administration

Sampling procedure and data collection: A three stage design was adopted to collect data during this study.

Stage1: Selection of study area (Abeokuta)

Stage 2: Purposive selection of 5 markets each from Abeokuta north and Abeokuta south
Local Government Area of the town to represent primary collection unit.
Stage 3: Random selection of 5 respondents (herbal practitioners comprising herbal sellers, herbalists,

Traditional herbal practitioner and herbal sellers) in specific market of each Local Government Area.
A total of 50 questionnaire were administered on the respondents to elicit ethobotanical
Information of plants **(Table 1);**

Table 1: Sampling design

Abeokuta Markets	Traditional Herbal Practitioners
Olomore	5
Iberekodo	5
Elega	5
Lafenwa	5
Obada oko	5
Kuto	5
Adatan	5
Sapon	5
Itoku	5
Omida	5
Total	50

Data analysis: Ethnobotanical data were analyzed and summarized on the reported medicinal plants and associated knowledge by using Microsoft excels and simple descriptive statistics to determine relative frequencies of citations so as to identify the most common and popularly used plants in the study areas. Results were presented in tables.

RESULTS

Gender disparity revealed that 58% of the respondents under this investigation were females while 42% were males (Table 1). 4% of the respondents were below or 20years, 50% were between age group 21-40 years, 32% were between 41-60 years while 14% of them were above 60 years of age **(Table 1**). 4% practised Christianity, 22% practiced Islam while 38% were traditional worshippers. Majority of the respondents (88%) had formal education. 50% of the respondents were herbal sellers, 6% were traditional herbal practitioners, 20% were herbalists, while 24% were both traditional herbal practitioners and herbal material sellers **(Table 1).**

Sixty percent (60%) of the traditional herbal practitioners claimed to have treated catarrh and arthritis regularly, 36% had treated them irregularly while 4% did not treat the diseases at all (Table 1). 36% of the respondents do treat the diseases between 1-3 days, 26% do treat them for 4-6 days, 16% do treat for 7-9 days, 18% for 10-12 days while 4% of the traditional herbal practitioners gave no response. Also, 60% of the traditional herbal practitioners acquired herbal knowledge through ancestral method, 20% were trained, 10% acquired the knowledge by ancestral and training while 10% acquired the knowledge by divination. Seventy percent (70%) of the traditional herbal practitioners claimed to give verbal instructions **(Table 1).**

A total of forty four plants belonging to 28 families were collated being used for the management of catarrh and arthritis**.** Annonaceae, euphorbiaceae, zingiberraceae and solanaceae were the most frequently mentioned plant families **(Table 2).** An ethnobotanical information of the plants collated such as scientific, common and local name, family, plants parts used, methods of preparation and application employed, and their frequency of mention were summarized in **(Table 2).** These plants are arranged in alphabetical order; with their families, local name, part/ parts used and folk use.

The most frequently mentioned plants were *Moringa oleifera* (20.45%), *Vernonia amygdalina* (18.18%), *Occimum gratissimum* (15.91%), *Crinum jagus* (15.91%), *Milicia excelsa* (15.91%), *Ricinus communis* (15.91%), *Pettveria alliaceae* (15.91%), *Cybopogon citratus* (15.91%), *Euphorbia hirta* (13.64%), *Tetrapleura tetraptera* (13.63%) and *Terminalia ivorensis*(13.64%) (Table 2). 56.82% of plants were used as leaves, 6.82% as bulbs, 22.27% as leaves/stem, root/leaves, stem-bark and roots seeds, 4.55% as rhizomes while the whole parts of 20.45% of the plants were used for catarrh and arthritis herbal preparations **(Table 3**). 75.00% of the plants were reported being used when they are freshly collected while 25.00% were being used when they are freshly collected and in dry form mainly with solvents such as water, hot pap, local gin/lime water, and oil palm as represented by 84.09%, 2.27%, 6.82%, 2.27%, and 4.55% respectively**(Table 3).**

Common herbal preparations such as infusion (4.55%), decoction (54.55%), powder (4.55%), paste (25.00%), poultice (9.09%) and chewing (2.27%) were reported (Table 3). Also, 4.55% of the plants under this study were cultivated at home garden, 72.73% were cultivated at home garden and also available at various markets of the study area while 22.79% were found mainly in the forest. Inhalation and oral application were reportedly being employed for catarrh and other bronchial related diseases management while bathing and massage were common methods of herbal applications employed for arthritis, rheumatism and other inflammatory diseases.

Table-1: Distribution of Demographic profile and herbal practice of respondents**.**

Socio-economic variables	Frequency	%Frequency	Mode
Sex			
Male	21	42	
Female	29	58	58
Age class (Year)			
≤ 20	2	4	
21-40	25	50	50
41-60	16	32	
>60	7	14	
Religion			
Christianity	20	40	40
Islam	11	22	
Traditional	19	38	
Educational status			
Illiterates	11	22	
Primary school	16	32	
Secondary school	21	42	42
Tertiary	2	4	
Herbal practice specification			
Herbal sellers	25	50	50
Traditional herbal Practitioners	3	6	
Traditional herbal practitioner and Herbal sellers.	12	24	
Herbalists	10	20	
Frequency of treatment			
Regular	30	60	60
Irregular	18	36	
Not all	2	4	
Duration of treatment (Days)			
1-3	18	36	36
4-6	13	26	
7-9	8	16	
10-12	9	18	
No- response	2	4	
Source of knowledge			
Ancestral	30	60	60
Training	10	20	
Ancestral/ Training	5	10	
Divination	5	10	
Accompanied verbal instruction			
Yes	15	30	
No	35	70	70

Table 2: Scientific Name, Common and local Name and Family Name, of some botanicals used for management of catarrh and arthritis

Scientific Name	Common Name	Local Name	Family Name	Source of plant	Part used	%Frequency	Solvents of choice	Plant types .	Treatment Recipe
Allium cepa	Onion	Alubosa	Liliaceae	Home garden and Market	Bulbs	1(2.27)	Water	Both freshly collected and dry	Mix the infusion with honey for cold and respiratory diseases
Allium sativum	Garlic	Ayuu	Liliaceae	Home garden and Market	Bulbs	1(2.27)	Water	Both freshly collected and dry	Cold infusion of bulb for cold and catarrh
Aloe vera	Barbados alos	Aho-erin	Liliaceace	Home garden and market	Leaves	1(2.27)	Water	Freshly collected	The paste is used orally or mixed with Mustard seed oil and apply on the arthritic joint.
Andrographyis paniculata	King of bitter		Acanthaceae	Home garden and market	Whole parts	4(9.09)	Water	Freshly collected	Root paste is applied externally on rheumatism and gout affected part.
Butryospermum paradoxum	Shear butter	Ori	Sapotaceae	Home garden and Market	Leaves, Stem-Barks	3(6.82)	Water	Freshly collected	Inhale the hot decoction for 1-2 days for nasal decongestion and Catarrh
Calotropis procera	Sodom apple	Bomubomu	Asclepiadaceae	Home garden and market	Leaves	3(6.82)	None	Freshly collected	Powder of the plant and *Ricnus cumminis* leaves are used to treat rheumatism
Cordia milleni	Drum tree	Omo	Boraginaceae	Forest	Leaves	2(4.55)	Water	Freshly collected	Decoction of the plant is used as fever remedy and general weakness of joints.
Costus afer	Ginger lily	Ireke omode	Zingiberaceae	Home garden and market	Whole part	3(6.82)	Water	Freshly collected	Leaf paste of the plant is applied externally
Crinum jagus	Crinum	Ogede odo	Amarylidaceae	Home garden and market	Leaves	7(15.91)	Water	Freshly collected	Hot poultice of the leaves with castor oil or oil palm oil is applied to the joints.

Crotalaria prostrate	Rattle	Iwerejede	Leguminosae	Home garden and markets	Leaves	4(9.09)	Water	Freshly collected	Paste prepared from the leaves of the plant applies externally for the treatment of rheumatism.
Croton zambesiscus	Croton	Ajeobale	Euphorbiaceae	Forest	Leaves	1(2.27)	Water	Both Freshly collected and dry	The decoction of the plant is externally used as liniment for arthritis and other joint diseases
Cucurma caesia	Black ginger		Zingiberaceae	Home garden and markets	Rhizomes	2(4.55)	Water , local gin	Freshly collected	Rhizomes are cooked with mustard oil to form paste, the paste is applied externally on the arthritis and muscular pain.
Curcuma amada	Mango finger	Egbo –osusu	Zingiberaceae	Home garden and market	Rhizomes	1(2.27)	Water	Freshly collected	Rhizomes are pasted and mixed with hot oil and apply 2-3 times daily for 5 days on the joint pains
Cymbopogon citratus	Lemon grass	Kooko- Oba	Poaceae	Home garden and Market	Leaves	6(13.64)	Water, gin	Both freshly collected and dry	Inhale the vapor from hot decoction every morning for until the symptoms of malaria disappears.
Datura methel	Devil's trumpet	Apikan	Solanaceae	Home garden and market	Whole parts	5(11.36)	Water	Freshly collected	A poultice of the leaves is used to massage joint inflammation.
Dennettia tripelata	Pepper fruit	Igberi	Annonaceae	Home garden and Market	Leaves	4(9.09)	Water	Freshly collected	Leaves, fruit or seeds are chewed for treating cough.
Euphorbia hirta	Asthma weed	Emi-ile	Euphorbiaceae	Home garden and Market	Leaves	6(13.64)	Water	Freshly collected	Decoction of the leaves is given in bronchial orally.
Garcinia kola	Bitter kola	Orogbo	Sterculiaceae	Home garden and markets	Leaves	5(11.36)	Water	Freshly collected	Take the leaf decoction orally every morning and night for 3 days.
Lannea welwitshsii	Lannea	Opon	Anarcadiaceae	Forest	Leaves	5(11.36)	Water	Freshly collected	Decoction of leaves is applied over sprains, bruises, swelling and arthritic joints

Lantana camara	Bush lantana	Ewon agogo	Verbanaceae	Forest	Leaves	4(9.09)	Water	Both freshly collected and dry	The decoction of the of leaves is taken
Lonchocarpus cyanenscens	Indigofera	Ipapo	Fabaceae	Home garden and market	Leaves	3(6.82)	None	Freshly collected	Leaves are dried , powdered and taken orally for treatment of osteoarthritis . Decoction is recommended for arthritic condition.
Milicia exelsa	Mulberry	Iroko	Moraceae	Forest	Roots	7(15.91)	Water	Freshly collected	The root decoction is used for bathing and drinking
Moringa oleifera	Drumstick tree	Ewe igbale	Moringaceae	Home garden and markets	Roots, Leaves	9(20.45)	Hot pap, water	Freshly collected	Inhale and bath with vapour from hot decoction of leaves every morning for 3-5 days
Nicotiana tabacum	Tobacco	Taba	Solanaceae	Home garden and market	Leaves	3(6.82)	Water	Both freshly collected and dry	Drink the leaf decoction until the symptoms disappear. Aromatherapy.
Ocimum basilicum	Scent leaf	Efirin	Laminaceae	Forest	Whole parts	5(11.36)	Water	Freshly collected	Decoction of the whole part is applied on the joint every night and morning.
Ocimum gratissimum	Holy Basil	Efinrin	Labiateae	Home garden and market	Leaves	7(15.91)	Local gin, water	Freshly collected	Decoction of whole plant or Leaves for cold and cough. powder of leaves is taken orally for catarrh
Pettveria alliiaceae	Hen weed	Awogba	Phytolaccaceae	Home garden and market	Whole parts	7(15.91)	Hot water	Both freshly collected and dry	Decoction of the parts is used for bathing
Phyllanthus amarus	Stone breaker	Eyin olobe	Euphorbiaceae	Home garden and market	Whole parts	6(13.64)	Water	Freshly collected	Decoction of the plant is used to massage the affected part.

Piper nitrigum	Black pepper	Odusa	Piperraceae	Home garden and markets	Seed	2(4.55)	Water	Freshly collected	Paste prepared from the seed is used to massage the affected parts.
Plumeria rubra	Grave yard flower	Atibale	Apocynaceae	Forest	Whole parts	6(13.64)	Water	Both freshly collected and dry	Decoction of any part of the plant is used for bathing and massage. Root powder is taken with local gin.
Polyathia longifolia	Masquerade tree	Igi egun	Annonaceae	Home garden	Leaves	1(2.27)	Water	Freshly collected	Decoction is taken orally for treatment of gout.
Ricinus communis	Castor oil	Laa	Euphorbiaaceae	Home garden and market	Leaves	7(15.91)	Water	Freshly collected	Leaf paste of the leaves is taken orally.
Sida rhomboidea	Iron weed	Sanyo	Malvaceae	Home garden and market	Leaves	1(2.27)	Water	Freshly collected	Paste the root with water and apply on the joint overnight
Solanum nigrum	Black nightshade	Odu	Solanaceae	Home garden and market	Leaves	3(6.82)	Water	Freshly collected	Poultice of the leaves is very efficacious for arthtis.
Solenostemon monostarchyus	Golden shrimp plant	Olojongbodu	Laminaceae	Home garden and market	Leaves	1(2.27)	Water	Freshly collected	Poultice of the leaves is applied on the affected joints.
Syzgium aromaticum	Clove		Mytaceae	Home garden and market	Leaves	3(6.82)	Water	Freshly collected	Boil the fruit or cloves in water and add milk. Take the mixture orally 2 times daily for 5-7 day to treat cough and catarrh
Terminalia ivorensis	Black afara	Idigbo	Combretaceae	Forest	Stem-bark	6(13.64)	Water	Both freshly collected and dry	Paste prepared from powdered stem –bark is applied for relief from arthritis pain.

Tetrapleura tetraptera	Tetrapleura	Aidan	Mimosoideae	Forest	Whole parts	6(13.64)	Water, lime water	Both freshly collected and dry	Inhale and massage nose with hot leaf decoction for 2-3days to treat cough and catarrh.
Tridax procumbens	Tridax	Igbalode	Asteraceae	Home garden	Leaves	4(9.09)	Water	Freshly collected	Oral application of hot decoction of leaves
Uvaria chamae	*Uvaria chamac*	Eruju	Anonnonaceae	Home garden and market	Leaves	5(11.36)	Water	Freshly collected	Decoction of root and barks for cold and catarrh
Vernonia amygdalina	Bitter leaf	Ewuro	Asteraceae	Home garden and market	Whole parts	8(18.18)	Water	Freshly collected	Squeeze the leaves until foams come out, apply the foam o f the affected parts. Leaves decoction of the plant can be taken orally. The leaves of the plant may also be taken as food.
Vitex doniana	Black plum	Ori eeta	Verbanaceae	Forest	Leaves	2(4.55)	Water	Both freshly collected and dry	Decoction of the leaves of the plant and that of alligator pepper are applied on inflammatory part. Dry leaves are roasted into powder and tied over the knell for the treatment of rheumatism
Xylopiaaethiopica	Ethiopian pepper	Eeru	Annonaceae	Home garden and market	Leaves	2(4.55)	Water	Freshly collected	Paste from the leaves is mixed with local soup and used to bath
Zingiber officinale	Ginger	Ate-ile	Zingiberaceae	Home garden and market	Bulbs	2(4.55)	Water	Both freshly collected and dry	Decoction of rhizome for cold and catarrh. Mix ginger powder with honey for cough and cold.

Table 3: Life forms, habitat, plant parts used, solvents, dosage measurement and non- plant materials used in treating catarrh and arthritis

	Frequency	% frequency	Mode
Commonly used plant parts			
Leaves	25	54.55	56.82
Leaves/stem-bark	1	2.27	
Bulbs	3	6.82	
Root/leaves	1	2.27	
Whole plant	9	20.45	
Rhizomes	2	4.55	
Stem-bark	1	2.27	
Roots	1	2.27	
Seeds	1	2.27	
Total	**50**	**100**	
Common preparation methods			
Infusion	2	4.55	
Decoction	24	54.55	54.55
Powder	2	4.55	
Paste	11	25.00	
Poultice	4	9.09	
Chewing	1	2.27	
Total	**50**	**100**	
commonly used solvents			
Water	37	84.09	84.09
Hot pap	1	2.27	
Local gin	3	6.82	
lime water	1	2.27	
Oil palm	2	4.55	
Types of herbs			
Freshly collected	33	75.00	75.00
Freshly collected and dry	11	25.00	
Total	**50**	**100**	
Availability			
Home garden and market	32	72.73	72.73
Home garden	2	4.55	
Forest	10	22.79	

DISCUSSION

Gender disparities revealed that larger percentage of respondents under this investigation were females. This observation may account for the larger proportion of females recorded in the study area involving in herbal material trade. Highest and lowest percentage of respondents observed at age group 21-40 years and below or 20years may imply that at age 21-40 the respondents were more active and had better understanding of relevance of plants in health care delivery while majority of respondents at age group below 20 were characterized by schooling teenagers who had no interest in traditional medicines of their immediate environment. This observation corroborates the report of Johnsy *et al.* [8] who claimed that herbal practice is fetish, meant for the lazy and tends to disappear in the younger generation. Also Anant[9] opined that indigenous knowledge on usage of medicinal plants is at decline rate without any systematic approach to document it. The younger generation of the study area was not interested in traditional indigenous healing system. Religion affiliation had no effect on herbal practice as majority of the respondents under the study were made up interdenominational religions. Similar observation was

reported by Kadiri *et al.*[10]. Majority of the respondents had formal education, which provided them the necessary skills needed for their herbal profession. This study has shown that the source of traditional herbal knowledge is traceable to the ancestral. The implication of this is that if necessary ethnobotanical documentation is not embarked upon, plants will be mismanaged and valuable information about these plants will be lost over a period of time.

This ethnobotanical study revealed that medicinal plants of Abeokuta still play a vital role in the primary health care delivery of the people despite the orthodox treatment. The information gathered from the respondents could be useful for further pharmacological research modification and in the field of ethno-medico-botany, taxonomy and pharmacology as earlier stated by *Lingaiah* and *Nagarajarao*, *2013*[11].

A total of forty four plants belonging to 38 families were collated as being used for management of catarrh and arthritis. Annonaceae, euphorbiaceae, zingiberraceae and solanaceae were the most frequently plant families cited. The most frequently cited plants were *Moringa oleifera*, *Vernonia amygdalina*, *Occimum gratissimum*, *Crinum jagus*, *Milicia excels*, *Ricinus cmmunis*, *Pettveria alliaceae*, *Cybopogon citratus*, *Euphorbia hirta*, *Tetrapleura tetraptera* and *Terminalia ivorensis*. The frequent occurrence of other families also suggests their importance as repository of useful plants which may be explored for catarrh, arthritis and other diseases treatment.

Results also revealed that quite a number plant parts such as leaves, bulbs, leaves/stem, root/leaves, stem-bark and roots seeds, rhizomes and whole parts were found being efficient in the treatment of the catarrh and arthritis. Leaves were the most commonly used. This may be an indication that leaf is a major site of phytochemical synthesis, can be easily accessed or the use of leaves is less destructive to the plants themselves compared with roots and stems. This observation is in agreement with the finding of Pratul[12] *Koumba Madingou et al.* (2012) [13]; Manishayadav *et al.*[14] Raut *et al.*[15] and Vinatha and Estari[16]. The anti-inflammatory effects suspected in some of these plant could be attributable to the presence of their active constituents such as iridoids compounds, flavonoids, diterpenoids derivatives, phytosteroids, with antioxidant, anti-inflammatory, antimicrobial, Hepatoprotective activity, analgesic and antihistamine, anti-diabetic, anti-implantation, anti-asthmatic and anticancer activity[17,18].

Furthermore, it was observed that water was the main solvent used for infusion, decoction, boiling, concoction and other mixtures. The observation that majority of plants collated were used when they were freshly collected may connote that fresh plants retain their phytochemical contents more than dry plants most especially when the phytochemical contents are volatile. Also, majority of the plants have multipurpose medicinal uses, hence, they are regarded as ‘‘gbobonise’’ (ability to heal diverse diseases) by Yorubas. This observation agrees with the finding of Jitin[19,] Kadiri *et al,* [10] who reported that fresh part of the plant can be used for the preparation of medicine even in combinations of different parts. Common herbal preparations such as infusion, decoction, powder, paste, poultice and chewing were reported.

Plants parts were boiled into decoction in the case of catarrh and the water vapour from the decoction is inhaled for nasal decongestion. Small quantities of oil are added to the paste prepared by crushing the plant parts and applied over the affected joints. The addition of oil might be to enhance the efficacy of the herbal remedies. Similar finding was reported by Anant *et al*. [20] who reported that along with the plants parts, little amount of salt, oil or ghee were added to herbal dermatological remedies. The observation is also in line with the findings of Annalakshmi *et al,*[21] who stated that decoction of leaves of *Peganum harmala* Linn. is given orally to cure rheumatism and seed powder is to the children with water as a vermifuge against tape worm.

The respondents claimed that the herbal dose given to the patient depends on age, physical status and severity of the health conditions of the patient. The method of use of plants varies according to nature of disease. In the majority of the cases, decoction and paste of various parts of plants used are administered

for treating a disease or diseases. Most of the decoctions are made just by crushing the plant parts but some are made by boiling plant parts in water, decanting of the liquid and drinking after cooling. Paste of some plants is plastered to set dislocated or fractured bones or muscular pain[22, 23]. Inhalation and oral application were reported being employed for catarrh and other bronchial related diseases management while bathing and massage were common methods of herbal application employed for arthritis, rheumatism and other inflammatory diseases. Similar observation was reported by Nitesh and Rajaram[24]. The findings of this study are in conformity with many previously conducted ethnomedicinal surveys and pharmacological studies in other parts of Nigeria.

Apart from cultivating the plants at home garden addition to the observation of Sani and Aliyu[25] Nwachukwu *et al.*[26] who reported that majority of medicinal plants grow in the wild, they are under threat as a result of Agricultural and anthropogenic interference and that few of them are domesticated with or without the knowledge of their *efficacy* for treating most common ailments and diseases in the area, the plants served mostly the immediate medicinal needs of catarrh and arthtis. Vast number of the medicinal plants under this investigation are cultivated at home gardens of the respondents as well as being displayed in local markets. This observation could be an indication that plants do not only produce healing effect, they are also potential sources of income as key to sustainable livelihood of rural populace. Medicinal plants are highly patronized most especially during dry season as some of them could not exist in their natural habitats throughout the seasons of the year. This report is in accordance with results of Ariwaodo *et a*l., 2013 who reported that medicinal plants have high demand in the markets. Similarly, Udaiyar *et al*,[28] reported a growing interest among the local people and farmers in cultivating medicinal plants which having high medicinal value and significance trademarks. Also the results of this study indicate that these plants are probably the natural botanical sources of medicine being manufactured by indigenous pharmaceutical markets.

However, the efficacy and safety of the commonly used ethnomedicinal plants need to be evaluated for detailed phytochemical and pharmacological studies especially the plants with high trade value should be given priority to carry out bioassay and toxicity studies as suggested by Udaiyar *et al.*[28].

Today, ethnobotany is in the midst of renaissance. This revival reflects increasing concern about the decline and total extinction of the rain forests and the tribal cultures inhabiting them. Medicinal plants according to Anifowose[29], Annalakshmi *et al,*[21] (2012), should be focused for regeneration and propagation because Sorungbe[5] reported that only about 39% of Rural Communities in Nigeria have access to modern health care services.

The usage of herbal remedies in treating arthtis, catarrh and other respiratory diseases is useful because of long cultural history of utilization and the current renewed interest in natural products to sustain global health. As a way of recognizing the values and roles of traditional medical knowledge in health care provision, further research into the efficacy and safety of herbal remedies employed in the treatment of the diseases is very important in Nigeria

CONCLUSION

Systematic documentation of this vast indigenous traditional medicine knowledge is of great benefit for the preservation of indigenous knowledge, cultural values, conservation, management and use of plant resources, further pharmacological research, bioprospecting and drug discovery is necessary.

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