

Ethno-Medicinal Plants Used for Respiratory Disorders among the Igala and Yoruba (Okun) People in Kogi State, Nigeria

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Abstract

Respiratory disorders are common problem and cause of death among the Igala and Yoruba (Okun) speaking people of Kogi State due to climatic conditions and scarce health care facilities. The people rely upon the indigenous plant resources to cure various respiratory disorders. The focus for this present study is to document available ethno-medicinal data of plants used for respiratory disorders among the Igala and Yoruba (Okun) speaking people of Kogi State. A total of 84 species belonging to 42 families used to treat respiratory disorders among the Igala and Okun people has been documented. Cough was the disorder treated by the highest number of species followed by asthma, bronchitis, cold, Tonsillitis, Convulsion, Throat infections, Tuberculosis, Epilepsy, Catarrh and then Hiccup respectively. The common plant parts and preparation methods of the medicinal recipes are from leaves, root, seeds, fruit, stem, bark, the whole plant, flower, rhizome, bulb and corm and latex in the form of infusion, decoction, extracts, pastes, juice and or chewed. A sample of 900 respondents from the study areas who have wealth of knowledge in plant use and traditional medicine were drawn using a stratified random sampling technique. A well organized questionnaire was the major source of instrument for data collection. Part of plants and their mode of application will also be sought. It is recommended that detailed phytochemical studies be carried out to ascertain the active ingredients.

Key words: Respiratory disorder, Ethno-medicine, Health, Plants

Introduction

Respiratory disorder is a type of disease that affects the lungs and airways that affect respiration in human, it can be caused by genetic factor, allergies, dust, chemicals, smoking tobacco or by breathing in second hand tobacco smoke, asbestos, other forms of air pollution, such disorders could be pulmonary infection or chronic lung diseases which include tuberculosis, asthma, bronchitis, cough, cold, catarrh, pulmonary hypertension, COVID-19, Pneumonia, lung cancer, bacterial and viral infection. It is believed that there is no cure for this disease but various treatment options are used to reduce the symptoms, slow the progression and improve the quality of life.

Disorder is a state of malfunctioning of the body, therefore respiratory disorder is a medical term used to describe various types of infections, allergies and other diseases related to the different organs, tissues and specialized cells of human respiratory system, examples of respiratory disorder includes; common cold, pneumonia, lung cancer, asthma, influenza, tuberculosis etc. these respiratory diseases are categorized into three which are airways (affects bronchial tubes), lung tissue diseases (scarring or inflammation of tissues that enables lung to expand) and lung circulation diseases (blood vessels coagulate, swells or damage). Respiratory disease is a common and significant cause of illness and death around the world. The most common problems of the respiratory system are: asthma, bronchitis, Tuberculosis, common cold, cough and whooping cough (Reddy, Reddy and Trimurthulu, 2006). The Igala and Okun people are good at using firewood as their fuel during cooking, their men are good at bush burning when clearing farmland for cultivation, most of the roads are not tarred leading to raise of dust, there are other companies or factories (Cement industry, Ceramic, Iron and Steel, Red oil producing, Garri making, etc) in these areas that brings about different forms of air pollution. The prevalence of respiratory disease among the Igala and Okun people is increasing day-by-day with an annual increase many of the affected are children die before their fifth birthday due to the infection. A lot of people in the adult population are already suffering from asthma and bronchitis.

Plants have served as the main source of medicine for humans since the beginning of man and are most widely used medicines in the world today for treating different types of diseases. The people depend on the indigenous plant resources to treat various respiratory disorders. Some of the earliest modern medicines are indeed plant natural products for treating infectious diseases. Plants have a lot to offer for treating respiratory disorders, but it will require interdisciplinary research efforts to fully realize this potential. The present study aimed at documenting the traditional uses of medicinal plants used to treat different respiratory disorders among Igala and Okun people. Kogi State is a rich producer of medicinal plants with more than 6000 species which are extensively used for medicinal purposes due to its climatic zones including high altitudes.

During the previous few decades there has been an increase in the study of plants and their folk usage in various parts of Nigeria. In the recent years numbers of information are documented on the use of plants in indigenous healing system either by ethnic people or rural communities around the world is increasing. The knowledge of ethno medicine and its holistic approach supported by experience can serve as a fuel for the discovery of safe, new and affordable medicines.

Health, wellness and economic growth are important in the overall development of a people and it is one of the targets of Sustainable Development goal 3 which is to end epidemics by 2030. A state of health is said to exist when there is perfect harmony between humans and their environment (Mafimisebi and Oguntade, 2010). The respiratory disorder has imposed a lot socioeconomic burdens on individuals and societies. Compared with other non-communicable diseases, such as cardiovascular disease, cancer, and diabetes, respiratory disorders are seriously neglected (Khaltaev, 2017). The most important risk factors for respiratory disorders have been identified to include tobacco use, exposure to indoor and outdoor pollutants, allergens, occupational exposure, unhealthy diet, obesity, physical inactivity and other factors (Global surveillance, prevention and control of chronic respiratory diseases, 2019). Africans even in urban areas often use herbal remedy in conjunction with the care they receive in clinics and

hospitals (Fasola 2006; Awah, 2006). It is estimated that traditional medicine provides 80% -90% of healthcare in Africa (WHO, 2002).

Various plant species are going extinct throughout the tropics; more disturbing is the loss of the knowledge of how to use those species at an even faster rate. Indigenous knowledge is of utmost value to human as such should be tapped into to stop unconscious destruction of plant (Darrell, 1990). Native peoples can tell you much about their local plants; for instance whether they are poisonous, medicinal, good fuels or good for roofing material. They also know various methods of preparing the plants for these uses, when and how to harvest it and which parts, and also when and where it grows. This vital knowledge is being lost by the elimination of these natural ecosystems, and the eradication of the cultural adaptation of these traditional peoples (Weston, 1994). The unpleasant conclusion is that the human race is causing one of the first major reductions of global vascular plant diversity since the origin of life (Plotkin, 1995). With the disappearance of most floras, vast genetic bases of variation in botanical and zoological species that have evolved over thousands of years are being lost.

Herbal medicine has long been recognised as one of the oldest forms of remedies used by humans. In developing countries many people still depend on traditional healing practices and medicinal plants for their daily healthcare needs, even though there is a great progress in modern medicine. There is abundant undocumented traditional knowledge of herbal medicines used to treat diseases in most cultures, different traditional healing practices worldwide are designed for either therapeutic or prophylactic use in human or animal diseases (Offiah *et al.*, 2012).

The survival of man has been dependent on his inborn interest to investigate through trial and error all aspect of his environment (Saeed *et al.*, 2004). An attempt to promote rural growth that brings about progress in the quality of life and preservation of natural resources have had more favourable outcome when based on the local knowledge and present day design of resource use within the involved communities. Medicinal plants are boosted with diverse secondary metabolites; some of them can interrupt viral protein and enzyme activities by binding with them, and prevent viral penetration, replication into the host cells (Akram *et al.*, 2018; Dhama *et al.*, 2018). Presently many plants species are not used effectively because of lack of information on the potentials and uses as such it is essential to carry out this study. Studies on the knowledge and use of natural resources by local populations may contribute to finding economic alternatives for these populations, especially in terms of the cultural uses of plants in relation to their application in the treatment and management of respiratory disorder. Kogi state is rich in savanna and forest vegetations having useful medicinal application as well as other uses. There is however scarcity of documented information on the various uses of plants, thus the need for this survey to generate a scheme of ethno-medicinal application in the treatment and management of respiratory disorder, with the hope of documenting such knowledge and preserving them for the future generation as more plants are lost. This study thus, highlights potential medicinal plants sources for the treatment and management of respiratory diseases among the Igala and Yoruba (Okun) people in Kogi State, Nigeria, concentrating on the following research questions:

- i. What are the species compositions of plants often used for the treatment and management of respiratory diseases among the Igala and Yoruba (Okun) people?
- ii. Which respiratory conditions are most commonly treated with medicinal plant species?
- iii. What are the mode of preparation and application of those plant species?
- iv. What is the economical and conservation status of the plant species used for respiratory disorders?

The study was essentially a survey research which sought to ascertain the potential of some medicinal plants sources for the treatment and management of respiratory diseases among the Igala and Yoruba (Okun) people in Kogi State.

Kogi State is located on latitudes 7⁰ 30' N and longitude 6⁰ 42' E and within the derived savanna zone of Nigeria (middle belt) and shares boundary with ten states. It has a total of 29,833km² altitude of 420m above sea level. The area is rich in both savanna and forest vegetation which harbours numerous species of plants upheld in folklore as having useful medicinal applications as well as other uses. The area is characterized by a mean annual rainfall of about 1,260mm. Rainfall begins in April and ends in October and dry season from November to March. Rainfall has two maxima, July and September. Within the dry season, harmattan sets in between November and January and the average annual temperature is 27⁰ C. The major tribes inhabiting the area are Igala and Okun (Yoruba) who are mainly farmers. The topography of this land is strongly undulating.

A sample of 900 respondents from the study area who have wealth of knowledge in plant use and traditional medicine were drawn using a stratified random sampling technique for the study. Preliminary information was obtained through the use of questionnaire and interviews with selected informants to give information about the local names of the plants, as well as their ecological habitat and distributions. Field trips were made to villages within the study area and assistants were used in the collection of data within the study area. Standard literatures were consulted for the plants' proper identification and uses.

RESULTS

A total of 900 respondents participated in the study, 58% of the participants were male while 42% were female, 10% were ethnobotanists, 90% herbalists and traditional medicine practitioners.

A total of 86 species belonging to 42 families used to treat respiratory disorders among the Igala and Okun people has been documented. Cough was the disorder treated by the highest number of species (29) followed by asthma (20), bronchitis (18), cold (12), Tonsillitis (7), Convulsion and Throat infections (6), Tuberculosis, Epilepsy and Catarrh (3) and then Hiccup (1). Most of the plants belongs to Asteraceae and Solanaceae family; the most used plants habit are trees (32), followed by herbs (29), shrubs (24), climber (5) and grass (1). Herbal medicine preparation was a common thing in the study area, the indigenous people harvest and use different plant parts such as leaf, root, seed, flower, Rhizomes, bulb and corm. It was discovered that Traditional healers in the region mostly prepare ethno medicinal recipes from leaves, followed by root, seeds, fruit, stem, bark, the whole plant, flower, rhizome, bulb and corm and latex in the form of infusion, decoction, extracts, pastes, juice and or chewed as seen in table below

Table 1: Species compositions often used for respiratory diseases among the Igala and Okun

S/no	Botanical name	Common name	Igala name	Yoruba name	Family	Habit	Uses	Part used
1	<i>Abelmoschus esculentus</i> (Linn.)	Okra/Okro	Oro-Ikpoloko	Ila	Malvaceae	shrub	Throat, cough and bronchitis infections	Fruit

	Moench.							
2	<i>Abrus precatorius</i> Linn	Crab's eye	Ẹpu/Omejulchẹkpa	Iwerejee/Ojuologbo	Fabaceae	Climber	The leaves infusion is used as remedy for Cough and Asthma	Leaves
3	<i>Acacia nilotica</i> (L.) P.J.H.Hurter&Mab	Gum arabic		Baani, Booni. Eso	Fabaceae	Tree	Stem and bark Infusion is remedy for Tonsillitis and Asthma	Flowers, Stem, Bark
4	<i>Acacia Senegal</i> (L) Willd	Acacia gum	Agwẹnẹche	Ihun	Mimosaceae	Shrub	The leaves infusion is used as remedy for rashes in the mouth and sore throat	Leaves
5	<i>Acacia seyal</i> Del	Red acacia/s hittah tree	Agwẹnẹche	Ihun	Fabaceae	Tree	The decoction of the bark or gum is used to treat bronchitis.	Bark, Gum
6	<i>Acanthospermum hispidum</i> DC	Starbur	Imiejo	Danguro	Asteraceae	Herb	Leaves and flower infusion are used to treat convulsion, epilepsy, cough and bronchitis.	Leaves and Flowers
7	<i>Achyranthes aspera</i> L	Prickly chaff, devil's horsewhip	Enyi-ejo	Aboro, Eemo	Amaranthaceae	Herb	Crushed Leaf is used for Tonsillitis Decoction, powder, and extract of the root is used for Asthma, bronchitis, cold, cough and pneumonia	Leaves, Root
8	<i>Adiantum capillusvenereis</i> Linn.	Maidenhair fern			Pteridaceae	Herb	Whole plant infusion is used for Cough, bronchitis, convulsion, asthma and whooping cough	Whole plant

9	<i>Afromomum daniellii</i> K. Schum	Guinea grains	Ichabolo	Oburo	Zingiberaceae	Herb	The fruit is eaten as remedy for Sour throat	Fruit
10	<i>Afromomum melegueta</i> (Rosc) K. Schum	Alligator pepper	Ata	Ataare	Zingiberaceae	Herb	Seeds are chewed to treat cough, clear nasal congestion and as Stimulant	Seeds
11	<i>Allium cepa</i> L.	Onion	Albacha	Alubosa	Alliaceae	Herb	Bulb and leaves infusion is used for Asthma, breathing, problem, cough and cold	Leaves and Bulb
12	<i>Allium sativum</i> L.	Garlic	Ukpèdu	Ayu	Alliaceae	Herb	Bulb Chewed, Chopped bulb, pounded bulb or leaf infusion is used to treat Tonsillitis, cold, cough, common	Bulb and Leaf
13	<i>Aloe barbadensis</i> Miller	<i>Aloe vera</i>	Alofera	Ahun-erin	Liliaceae	Herb	Extract from the leaves is used for treating Cough and asthma	Leaves
14	<i>Amaranthus spinosus</i> L.	Spiny Amaranth	Ikeke-Ogolo	Tete-elegun	Amaranthaceae	Herb	Infusion of the whole plant is taken for the treatment of Bronchitis	Whole plant
15	<i>Anacardium occidentale</i> Linn.	Cashew	Ikachu, Opigolo, Agala	Kaju	Anacardiaceae	Tree	Chewing the tender leaves or fruits and or bark decoction is used for treating cough	Bark, Fruits and Leaves
16	<i>Annona senegalensis</i> Pers	Sweet sop	Ukpokpo	Abo / Ibobo	Annonaceae	Shrub	The leaves infusion is used as Remedy for cough & the roots and barks decoction in conjunction with <i>Uveria chamae</i> is used as cough,	Leaves

							toothache	
17	<i>Asparagus africanus</i> Lam	Bush or wild asparagus	Iga'awule	Aluki	Asparagaceae	Climbing fern (shrub)	Root decoction is used as remedy for Cough and sore throat	Root
18	<i>Aspilla africana</i> (Pers.) C. D. Adams.	Marigold	Idoḍoḍo	Yunyun	Asteraceae	Herb	Decoction of leaves Heals Asthma	Leaves
19	<i>Azadirachta indica</i> A. Juss.	Neem	Oliḍadaa	Dogonyaro	Meliaceae	Tree	Leaves infusion is used as laxative and for the treatment of malaria and cough.	Leaves and Bark
20	<i>Bambusa vulgaris</i> Wendel	Bamboo	Oḍachḍo	Oparun	Poaceae	Tree	Decoction of tender leaves and roots for chronic cough and asthma, throat congestion	Tender Leaves and Root
21	<i>Bryophyllum pinnatum</i> (Lam) Oken.	Life plant		Abamoda	Crassulaceae	Herb	Decoction of the leaves is used as Remedy for chronic cough	Leaves
22	<i>Burkea africana</i> Hook	Wild syringe	Oḍakachi	Apasa	Caesalpinaeae	Tree	The bark decoctions or infusions are used to treat fever, cough, catarrh, pneumonia. Root decoctions or infusions are used to treat, epilepsy. Leaves are used in the treatment of epilepsy	Bark, root, Leaves
23	<i>Calotropis procera</i> (Aiton) R. Br.	Sodom apple	Eḍo-fufu, Iḍomubomu	Bomubomu	Asclepiadaceae	Shrub	Root decoction, flower infusion and latex of the plant is used for Cough, asthma,	Roots, Flowers, Latex

							bronchitis	
24	<i>Capsicum annum</i> Linn.	Pepper	Akpọọ/ Akpọkọ	Ata	Solanaceae	Shrub	Root decoction are used as remedy for, bronchitis, Gonorrhoea	Fruit and Root
25	<i>Carica papaya</i> Linn.	Pawpaw	Echibakpa	Ibepe	Caricaceae	Non – woody tree	Root Crushed and boiled is used as remedy for Cough	Root
26	<i>Cassia alata</i> Linn syn. <i>Senna alata</i> (L) Roxb	Candle stick	Ogujẹba	Asunwon / Aje – ile	Caesalpinia ceae	Shrub	Leaves infusion or decoction is used to treat convulsions, heart failure.	Leaves
27	<i>Cassia occidentalis</i> Linn syn. <i>Senna occidentalis</i> (L) Link	Negro coffee	Agboomẹkpa	Reere	Caesalpinia ceae	Shrub	The seeds are brewed into a coffee-like beverage for asthma, and a flower infusion is used for bronchitis. The roots decoction is for fevers, and tuberculosis	Leaves, Flowers, Roots and Seeds
28	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Lime	Alemu-inala	Osanwewe	Rutaceae	Shrub	Infusion of leaves, decoction of root and Fruit Juice is used for Cough	Fruits, Leaves, Root
29	<i>Citrus limon</i> (L.) Osbeck	Lemon	Ilemoni	Osan-iba	Rutaceae	Shrub	Leaves infusion and Fruit is Chewed for Cough	Fruits and Leaves
30	<i>Citrus medica</i>	Grape	Alemu-iba	Osan-nla	Rutaceae	Tree	Infusion of leaves, decoction of root and Fruit Juice is used for Cough, cold, asthma	Leaves, Root, Fruits and Juice
31	<i>Cnestis ferruginea</i>	Cnestis	Ọdọ-ichekpa	Omu-aja	Connaraceae	Shrub	Leaves infusion are used as Anti	Leaves and

	Vahl ex DC						inflammatory and Analgesic. Fruit is chewed as oral hygiene	Fruit
32	<i>Cola nitida</i> (Vent.) Schott and Endl.	Kola	Obi	Gbanja	Sterculiaceae	Tree	Fruit is chewed for Stimulant and as remedy for cough	Fruit
33	<i>Curcuma longa</i> Linn.	Turmeric		Ata-ile pupa	Zingiberaceae	Herb	Underground stem Extract, decoction, infusion is taken orally for treatment of Pulmonary infection, tuberculosis	Underground stem (Root)
34	<i>Cymbopogon citratus</i> (DC.) Stapf	Lemon grass	Èlè / Ilè	Kooko-òba	Poaceae	Grass	Leaves infusion are used as Anti cold, anti malaria and anti cough	Leaves
35	<i>Daniellia oliveri</i> Benn	African balsam	Agba	Iya	Caesalpiniaceae	Tree	Bark decoction is used for the Treatment of epilepsy and Hepatitis B. Gum is chewed to treat cough, bronchitis, cold, tuberculosis	Bark Gum
36	<i>Datura innoxia</i> Mill	Thorn apple	Jẹkẹmi	Apikan, Ododo-omode	Euphorbiaceae	Shrub	Dried leaves, seeds and or fruit infusion is taken for Asthma	leaves, seeds and fruit
37	<i>Dennettia tripetala</i> G. Baker	Pepper fruit	Opipi	Igberi	Annonaceae	Tree	Fruit is chewed for Stimulant and as remedy for cough	Fruits
38	<i>Detarium microcarpum</i> Guill. & Perr	Tallow tree	Ọkakachi	Ogbogbo	Fabaceae	Tree	Decoction of the leaves is taken to treat fainting, tuberculosis and convulsions. decoction of the powdered bark is	Leaves and fruits

							taken to alleviate sore throat	
39	<i>Dialium guinensis</i> Willd	Black tumbler	Aigele	Awin	Fabaceae	Tree	Leaves infusion is remedy for cough and cold	Leaves
40	<i>Elaeis guineensis</i> Jacq	Palm tree	Ekpe	Ope	Areaceae	Tree	Oil extract from kernel are used as Anti convulsion	Kernel
41	<i>Elytraria marginata</i> Vahl	Scaly stem		Eso, Osanyin	Acanthaceae	Herb	Infusion of plant is taken as remedy for cough	Whole plant
42	<i>Entada abyssinica</i> (L) Steudel ex A. Rich.	Tree Entada	Atakpaefa	Gbengbe	Mimosaceae	Tree	A decoction of the bark is taken for Coughs, chronic bronchitis. And infusion of crushed roots is good for Bronchial problems. powdered or roasted pulverized seeds for Sneezing;	Leaves, barks, fruits, seeds and roots
43	<i>Entada africana</i> (L) Steudel ex A. Rich	Tree Entada	Atakpaefa	Gbengbe, Ogurobe	Mimosaceae	Tree	A root or leaf decoction is used as remedy for fever and juice from the stem as remedy for respiratory diseases	Root, Leaves, stem
44	<i>Euphorbia hirta</i> Linn.	Asthma herb	Eny-akpe / omiakukede	Emile	Euphorbiaceae	Herb	Leaves infusion are used as Remedy for asthma	Leaves
45	<i>Ficus exasperata</i> Vahl.	Fig tree	Ogbaikolo	Epin	Moraceae	Tree	Leaves infusion are used to treat cough	Leaves
46	<i>Garcinia kola</i> Heckel.	Bitter kola	Igologo	Orogbo	Clusiaceae	Tree	Fruits are chewed as Stimulant, while	Fruits & Leaves

							the Leaves infusion are used as remedy for cough	
47	<i>Gossypium hirsutum</i> Linn.	Cotton	Owu-etutu	Owu	Tiliaceae	Shrub	Leaves infusion are used for bronchial congestion	Leaves
48	<i>Hannoa undulata</i> (Guill. & Perr.) Planch / <i>Quassi undulata</i> (Guill. & Perr.) D. Dietr	Monkey plum	Mopula	Oriji, Igi-afee	Simarouba ceae	Tree	Leaves and stem infusion or decoction are used as Anti – hiccup, stem bark or root bark infusion or decoction are used as remedy for cough , purgative and cure for stomach ache, fever, leprosy	Stem bark, root bark and leaves
49	<i>Helianthus annuus</i> Linn.	Sun flower		Agbale	Asteraceae	Shrub	Leaf, root or flower tea, and chewing the seed is useful for treating Asthma, bronchial infection, pulmonary infections, cold and cough	Flower, root, seed, leaves
50	<i>Hymenocardia acida</i> Tul.	Wedding heart	Enache	Orupa, Kelujeju, Oropa	<u>Phyllanthaceae</u>	Tree	A leaf macerate or leaf decoction is taken to treat coughs. Leaf powder in food is taken to treat Asthma. A bark decoction is widely taken to treat tuberculosis. The Powdered bark in water or	Flower, seeds, leaves, stem, bark

							pulped bark is taken to treat cough and epileptic fits	
51	<i>Ixora hutea</i> Linn.	Ixora	Okwubene	Isana-omode	Rubiaceae	Shrub	Leaves infusion are used as Anti-convulsion	Leaves
52	<i>Lawsonia inermis</i> L	Henna Plant	Inale	Laali, Lali	Punicaceae	Shrub	Powdered leaves, seeds, bark and flowers are made into tea and taken for Cough and bronchitis	Leaves, seeds, bark and flowers
53	<i>Malva sylvestris</i> L	Blue Mallow, Brave heart	Iku-akpulu	Akeriri	Malvaceae	Herb	Infusion is taken as remedy for Chronic bronchitis, dry cough, catarrh, asthma, irritation of mouth and throat	Whole plant
54	<i>Mangifera indica</i> Linn.	Mango	Umagolo	Mangoro	Anacardiaceae	Tree	Bark, leaves infusion or extract is used as remedy for Sore throat, Asthma, cough	Bark Leaves
55	<i>Mentha arvensis</i> L	Mint	Achefa / achafa	Efinrin-aaja	Lamiaceae	Herb	Stem is chewed as Remedy for tooth decay and sore throat	Stem
56	<i>Mimosa pudica</i> L.	Sensitive plant	Uchokudu	Patamo	Mimosaceae	Shrub	Leaves infusion or root decoction is taken as remedy for Asthma	Roots and leaves
57	<i>Nicotiana tabacum</i> Linn.	Tobacco	Ataba-otulu	Ewe-tabu	Solanaceae	Shrub	Dried and powdered flowers or leaves is inhaled for cold and flu. Leaves are chewed smoked	Flowers and leaves

							or inhaled as Stimulant & remedy for cold	
58	<i>Ocimum gratissimum</i> Linn	Mint, Clove basil	Anyeba	Efirin	Lamiaceae	Shrub	Leaves and root decoction treats gastro intestinal problems, diabetes & gonorrhoea	Leaves & root
59	<i>Parinari curatellaefolium</i> Planch ex Benth	Rough skinned plum	Ijakere	Idofun	Rosaceae	Tree	Leaves infusion or tender leaves chewed are used as Remedy for cough	Leaves
60	<i>Parkia biglobosa</i> (Jacq) R. Br. ex G. Don	Locust bean tree	Ugba	Igba/Iru-igba	Papilionaceae	Tree	Fermented seeds used in cooking food is Anti – hypertension	Seeds
61	<i>Peperomia pelluida</i> (L.) Kunth	Silver bush		Ewerinrin, Renre	Piperaceae	Herb	Whole plant squeezed and juice extracted and mixed with milk is used as remedy for Asthma and other respiratory tract disorder	Whole plant
62	<i>Pergularia daemia</i> (Forsk) Chior	Trellis vine		Ijoyun, Oju-Kokaru	Ascepinada ceae	Climber	Root or Leaves infusion is used for Headache, Bronchitis, cough and Asthma	Leaves
63	<i>Piper nigrum</i> L.	Black pepper	Aiyimili	Iyere	Piperaceae	Climber	as the prevention of cold and catarrh.	Leaves, seeds
64	<i>Protea madiensis</i> Oliv		Etikpamodo	Dehin-bolorun	Proteaceae	Shrub	Leaves infusion is used for the treatment of high temperature among children	Leaves
65	<i>Psidium guajava</i>	Guava	Igwoba	Guafa	Myrtaceae	Tree	Tender leaves are chewed for	Tender leaves,

	Linn.						Old cough, bronchitis and chronic whooping cough	Fruit
66	<i>Ricinus communis</i> L	Castor oil plant	Ugba-igbo	Laa-funfun, Lavapupa	Euphorbiaceae	Tree	Chewing or taking crushed boiled root is used for Flu, cold	Root
67	<i>Solanum incanum</i> L.	Bitter apple	Ebe	Igba-aja, Ikan	Solanaceae	Shrub	Fruit Juice is remedy Tonsillitis, Cough	Fruits
68	<i>Solanum nigrum</i> Linn	Black nightshade	Ebe	Odu, Igba	Solanaceae	Herb	Whole plant infusion is Remedy Cough, bronchitis	Whole plant
69	<i>Spondias mombin</i> Linn	Hog plum	Echikala	Iyeye	Anacardiaceae	Tree	Fruits are eaten and leaves infusion as Remedy for cough,	Leaves
70	<i>Striga hermonthica</i> (Delile) Benth.	Purple witch weed	Uga	Osa	Scrophulariaceae	Herb	Leaves infusion as remedy for jaundice, leprosy and pneumonia	Leaves
71	<i>Syzygium aromaticum</i> L.	Clove	Kanamfali	Kanafuru, Isinren	Myrtaceae	Tree	Powder steam inhalation sore throat and cough	seeds
72	<i>Syzygium guineense</i> (Willd.) DC.	Water berry	Ugolo	Adere, Igi-aro, Ori-ira	Myrtaceae	Tree	Leaf root and bark Chopped is used as remedy for Tonsillitis, flu and sore throat	Leaf, Bark and root
73	<i>Tamarindus indica</i> L.	tamarind	Ochamiya	Samuya	caesalpiniaceae	Tree	Leaves infusion is remedy for cough & cold	Leaves
74	<i>Tetrapleura tetraptera</i> Linn.	Aidan tree	Okpokili kpo	Aidan, Ariden	Fabaceae	Tree	the bark roots and leaves is used as antidote for convulsion Cold, flu	Bark, roots Leaves
75	<i>Thyme vulgaris</i>	Thyme	Anyebae gini	Efinrinwe	Lamiaceae	Herb	Decoction, powder, extract,	Leaves, flower

							paste, ash for Bronchitis, whooping cough	
76	<i>Tragia yucatanensis</i> Millsp.	Noseburn	Iñale-akpiti	Esinsin, Esin, Esisi	Euphorbiaceae	Herb	Root and leaf Powdered, boiled or decoction is used for Chronic cough and Tuberculosis	Root & leaf
77	<i>Tribulus terrestris</i> L.	Devil's weed		Dagunro	Amaranthaceae	Herb	Infusion of the plant is used as remedy for Cough and asthma	Whole plant
78	<i>Tridax procumbens</i> Linn.	PWD Weed	Abojigbi nigbini	Igbalode, Muwagun	Asteraceae	Herb	Leaves infusion is used as Remedy for stomach ache, stomach ulcer, convulsion in children & hypertension,	Leaves
79	<i>Uvaria chamae</i> P. Beauv	Bush banana, finger root	Awuloko	Igberinakin / Eruju	Annonaceae	Climbing Shrub	Bronchitis, cough, catarrh liver infection and Poison neutralizer	Root
80	<i>Vernonia amygdalina</i> Dcl.	Bitter leaf	Ilo	Ewuro	Asteraceae	Shrub	Leaf Crushed is used for Tonsillitis. Leaves infusion is used as remedy for insomnia, hypertension, fever & diabetes	Leaves
81	<i>Vitellaria paradoxum</i> (Gaertn,f)	Shea butter	Okume	Emi	Sapotaceae	Tree	Fruits or seeds are grinded into paste and the oil extracted As cream, remedy for high temperature and convulsion in children	Fruit or seed

82	<i>Walteria indica</i> L.		Achifu	Imiomo, ewe-epo	Sterculiaceae	Herb	Leaves and root infusion is used as remedy for sore throat, epilepsy, convulsions, and asthma	Leaves and root
83	<i>Xylopi aethipica</i> (Dunal) A. Rich	Negro pepper	Alu	Eeru/ erunje	Annonaceae	Shrub	Stimulant, bark decoction is used for treating asthma, cough, analgesic, flu, cold, bronchitis. Leaves infusion is used for treatment of bronchitis.	Fruit, bark, Leaves
84	<i>Zingiber officinale</i> Roscoe	Ginger	jinja	Jinja, atale	Zingiberaceae	Herb	Juice, paste infusion, extract or Root Crushed and boiled is taken orally for treatment of Cough, throat infection, cold and Tonsillitis	Underground Stem (Root)

Discussion

The Table shows list of the species compositions of plants used for the treatment and management of respiratory disorder among the Igala and Okun speaking people of Kogi State and their local names are clearly shown. The respondents reported the use of medicinal plants from a preselected list of symptoms.

The local names of plants are very essential as plants are more easily identified by their local names worldwide, although local names of plants lack uniformity and consistency and are not recommended directly for scientific accounts; they are still seen as a useful tool for obtaining useful information on plants (Singh, 2008). Respondents gave local names of the plants and their uses in relation to respiratory disorder. The local names mentioned were authenticated with their respective botanical names using standard texts. Information gathered showed that increasing number of people is turning to herbal remedies for prevention and cure of various diseases. It was discovered that people in rural communities use plants very well for medicinal purposes. It is therefore important to obtain the important knowledge from traditional local folklore in relation to medicinal use of plants especially in respect to respiratory disorder. It was also observed that all the medicinal plants were used for 2 or more symptoms and also more than one plant can be used to treat and manage a particular symptom. The medicinal plants identified were represented by all plant forms which are Trees, shrubs, herbs, climbers and grasses. Trees (32)

were found to be the most used plants followed by herbs (28), shrubs (23), climber (5) and grass (1). It was also noted most of the plants have little or no side effects; this was in accordance with Gbile and Adesina (1986). In agreement with Adekunle (2008) and Ayodele (2005) plant leaves is seen as a major component in most herbal preparation as such are important ingredient in traditional treatment of various diseases. Most of the herbal preparations were obtained from combinations with other plants, only few were prepared using more than one method. Decoctions and infusions were the most frequently used methods. Some of the plants revealed in the survey have been cited in the ethnobotanical survey of some African countries (Oni, 2010; Erinoso and Aworinde, 2012; Anslem, 2000; Adhikari, Marasini and Rayamajhee, 2020; Attah *et al.*, 2021). Respiratory disorders are still causing several deaths each year. It is therefore important to improve access to traditional medicine, especially in rural areas. Threatened species need special attention for traditional herbal medicine to be exploited sustainably.

Conclusions and Recommendations

Medicinal plants have been used to treat various diseases including respiratory disorders. In the current study the indigenous people of this region use the native plants to cure their respiratory diseases because of synergistic and preventive causes. There is therefore need to pay attention to sustainability and use of these plant species. It is also important that detailed phytochemical studies be carried out to ascertain the active ingredients that are believed to be contained in each of the plant species to give more emphasis on how to extract and develop new drugs to treat respiratory health problems.

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