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ETHNOBOTANICAL SURVEY OF SOME MEDICINAL PLANTS IN LOKOJA, KOGI STATE, NIGERIA

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ABSTRACT

An ethno-botanical study was conducted in Lokoja, Kogi State, Nigeria in order to identify plant species used for managing and treating various ailments in the area. The study involved the collection of bio- demographic features from respondents using scientifically structured questionnaires. Collection and identification of plant species of ethno-botanical importance was also carried out. A total of 90 respondents (Herbal practitioners) were interviewed during the study. Females 49 (54.4%) within the age range of 51-60 years were more into the business of traditional herbal medicine. A majority of the respondents were illiterates 38(42.2%), traditional healers 47(52.2%) and their source of knowledge was inheritance 49 (54.4%). A total of 45 plant species were identified as plants used for managing and treating various ailments in Lokoja, Kogi State, Nigeria.The plants belonged to twenty two (22) families which were Fabaceae (5),Rubiaceae (5),Asteraceae (5), Anacardiaceae (3),Euphorbiaceae (3),Malvaceae (3),Combretaceae (2), Cucurbitaceae (2), Lamiaceae (2), Amaryllidaceae (2),Rutaceae (2), Annonaceae (1), Ascleiadaceae (1), Araceae (1), Bignoniaceae (1), Bombaceae (1), Meliaceae (1), Paniaceae (1), Sapotaceae (1), Verbenaceae (1), Vitaceae (1) and Zygophyllaceae (1).Thirty nine percent (39%) of the plants identified were herbs, the leaves (30%) were the most used plant parts and wild plant species (48%) were the most used plant life forms for the management and treatment of various ailments. Morindalucidain the family Rubiaceae had the highest incidence of encounter, with a fidelity level of 90% and was identified as the most popularly used plant species for managing and treating of various ailments in Lokoja. The study has documented different traditional practices used for the management and treatment of various ailments in Lokoja. It has also provided the ethno-medicinal foundation for the pharmacological properties of notable medicinal plant species on various ailments and diseases. The study recommends that the knowledge of ethno-botanical plants should be passed on from generation to generation, through inheritance or apprenticeship, and advocates for the conservation of these plant species, to guarantee their availability at any point in time. Further studies are recommended to scientifically evaluate and validate these plant species by subjecting them to pharmacological activity essay in order to ascertain the claims of the traditional healers. These plant species could also be screened for their pharmaceutical properties, which could be useful in the formulation of new drugs.

KEYWORDS: Ethno-botanical, Survey, Medicinal plants, Lokoja, Nigeria

1. INTRODUCTION

Ethno-botany involves the study of how people useindigenous plants for food, medicine and clothing (Aiyeroja and Bello, 2006). Historically, most medicinal preparations were derived from plants whether in simple form of plants part or in the more complex form of crude extract mixtures. Today, a substantial number of drugs are made from plants that are active against some ailments (Principe, 2005). The use of medicinal plants is well known among the people of rural areas in developing countries. Plants, especially the higher ones, have been described as the sleeping giants of drugs and plants of medicinal value have been screened for their chemicals, that are potentially active (Fansworth, 1988). Many of the medicinal plants in Nigeria have been documented

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Parkiabiglobosa, Khayasenegalensis, Vitexdoniana, Balaniteegyptiaca, Vitellariaparadosa, Morindalucida and Citrus limon.

The importance of medicinal plants and the contribution of phytomedicine to the wellbeing of a significant number of the world's population have attracted interest from a variety of disciplines (Gill, 1992; Biapaetal., 2007). The documentation of medicinal plants for the purpose of today's utilization and conservation for future use cannot be over emphasized. A vast majority of drugs used in the world contain compounds that are directly or indirectly obtained from plants via semi synthesis (Sofowora, 2008). Even the synthetic drugs and compounds used in modern times are the active chemical compounds to the bioactive compounds in a plant, which has been identified and then copied (Fansworth, 1988). Thus, plants will continue to be a very important resource for new medicines and beneficial compounds. The World Health Organization (WHO, 2002) estimated that 80% of the world population relies on traditional healing process using herbs. Sofowora (2008) reported that Africa has as much as three hundred thousand medicinal plants. Investigations on medicinal plants could provide useful leads for the synthesis of important active compounds (Abubakar et al., 2017).Due to the crucial role that plant derived compounds have played in drug discovery and development for the management and treatment of several diseases, the isolation of new bioactive compounds from medicinal plants based on traditional use or ethno-medical data appears to be a very promising approach (Muhammad et al., 2013). Ethno-botanical survey is an important step in the identification, selection and development of the therapeutic agents from medicinal plants (Makinde et al., 2015). In African countries, approximately 80 % of the population uses traditional medicine for the treatment of various diseases and ailments like malaria, typhoid, ulcers, skin diseases, diabetes, reproductive problems and pains for various socio cultural and economic reasons. Ethno-botanical surveys have shown that traditional medicines have been found to be effective especially in the treatment of malaria which is of great concern to any African nation (Abubakaret al., 2016).

Plants with valuable contributions in the field of phytomedicine and general medicine includeOpium poppyfrom which an analgesic agent is derived,Catharanthusroseus from which vincristine and vinblastine used for cancer treatment are derived,Cinchona succirubra from which quinine and quinidine used as antimalarial agents are derived,Arthemesiaanua from whicharthemisinin used as antimalarial drug is derived,Digitalis purpurea from which digitalis used as a cardiotonic agent is derived,Physostigmavenenosomefrom which physostigmine used as a cholinergic agent is derived, to mention but a few. The research into plants with folkloric use as cure for different ailments is definitely a fruitful and logical research strategy in the search for novel drugs. The aim of the present study was to identify plants used for traditional medicine in Lokoja, Kogi State, Nigeria.

2.0 MATERIALS AND METHODS

Study area The study area (Lokoja and environs) is situated a typical guinea savanna vegetation.The area normally experiences an average annual rainfall of six to seven months (April to October) and an annual dry season of five to six months (October to March). Majority of the people are peasant farmers and civil servants. Lokoja lies between latitudes 70 45127.5611 N and 70 51104.3411 N and longitudes 60 411 55.6411 E and 60 451 36.5811 E. The sites covered during the ethno-botanical survey includedAdankolo, Lokongoma, Felele, International Market, Old Market, Kpata Market, Ganaja, Otokiti andZango(Figure 1).

Study Population The targeted population was male and female traditional medicine practitioners (TMPs), herbalists, herb sellers, elderly people with reputable knowledge on medicinal plants and their traditional uses. At least ten(10) peoplewere selected from each of the study sites of the study area making a total of ninety (90) people.

Data Collection Bio-demographic information about the respondents was collected and these include gender, age, level of

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education, occupation and source of herbal knowledge. For ethno-botanical survey,

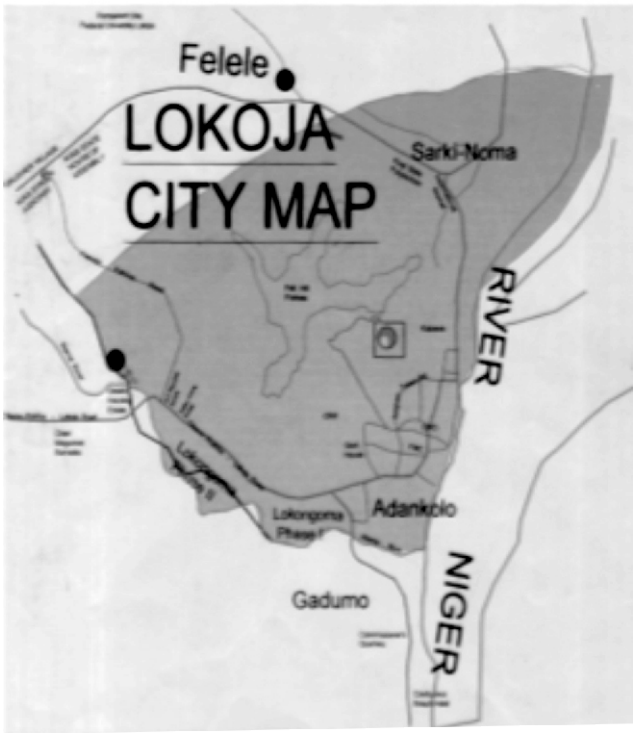

Figure 1: Map of the Ethno-botanical study sites, Lokoja, Kogi State, Nigeria

a scientifically structured questionnaire was used as a supplementary tool. The questionnaire adopted was that designed by Sofowora (2006). Interview was conducted with the informants in local languages, with the questionnaire as a guide. Interpreters were used where required. A tape recorder and a camera were also used during the interview session to record the information from the informants. The method employed for guiding accurate selection of medicinal plants was one designed by Betti (2004). In this method, inquiry was made as to what ailment was treated with the plant species, so as to ensure workable data selection/collection.

Collection of Plants and their Identification

For collection of plants and their identification, the method described by Francis (2005) was adopted. The plant samples were collected by the informants who knew the plants. Photographs of the collected plant species were taken to facilitate identification. Final identification and authentication of the collected plants were made at the Herbarium Unit, Department of Botany,Ahmadu Bello University Zaria with the help of the Taxonomists of the Unit. Voucher specimens were deposited at the herbarium of the Department of Biological Sciences, Federal University Lokoja, for future reference.

Data analysis

The information collectedfrom the bio-demographic features of the respondents was analyzed with the aid of descriptive statistics such as frequency and percentage. The data acquired from ethno-botanical survey were pooled together and analyzed using the quantitative methods (Use Value {UV = Σ u/n}and Fidelity Level {FL = Np/N × 100%}) as described by Friedman et al. (1986), Philips et al. (2002) and Prance et al. (1987) respectively. u = total number of uses where n = number of respondents that cited a particular species. Ip = number of respondents who cited the species for a particular use where Iu = total number of respondents that cited the plant for any use. Use Value is not based on the researcher opinion but significance attached to each species by the informants. The higher the number of citations made about a species, the higher the Use Value.

3.0 RESULTS

A total of 90 respondents were interviewed 41 (45.6%) of which were males and 49 (54.4%) females. Three (3.3%) of the respondents were within the age range of 21-30, 15(16.7%) of 31-40, 20 (22.2%) of 41-50, 31 (43.4%) of 51-60, 14 (15.6%) of 61-70 and 7 (7.8%) of unknown ages. Thirty eight (42.2%) of the respondents were illiterates i.e. they do not have formal education, 27 (30.0%) had primary education, 16 (17.8%) had secondary education and 9 (10.0%) had tertiary education. Forty seven (52.2%) of the respondents interviewed were traditional healers, 32 (35.6%) herb sellers and 11 (12.2%) others i.e. not in the business of herbal medicine but patronize it. Forty nine (54.4%) of the respondents had their source of herbal knowledge as inheritance, 28 (31.1%) from apprenticeship and 13 (14.4%) from other sources (Table 1).

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Table 1: Bio-demographic features of respondents on the plants used for medicine in Lokoja, Kogi State, Nigeria

Demographic Features	Frequency	Percentage (%)
Gender		
Male	41	45.6
Female	49	54.4
Total	90	100
Age		
21-30	3	3.3
31-40	15	16.7
41-50	20	22.2
51-60	31	34.4
61-70	14	15.6
Unknown	7	7.8
Level of Education		
Illiterate	38	42.2
Primary	27	30.0
Secondary	16	17.8
Tertiary	9	10.0
Occupation		
Traditional Healers	47	52.2
Herb Sellers	32	35.6
Others	11	12.2
Source of Knowledge		
Inheritance	49	54.4
Apprenticeship	28	31.1
Others	13	14.4

A total of forty five (45) plants belonging to twenty two families (22) were surveyed, collected and identified as medicinal plants used in managing and treating ailments in Lokoja, Kogi State, Nigeria. The scientific name, family name, common name, local name, growth form, disease treated by the plant, part of the plant used for treatment and fidelity level of treatment were recorded (Table 2). Based on growth form, 39% of the plants were herbs, 11% were graminoids, 9% climbers, 11 % shrubs and 30 % trees (Figure 2). Of the plant parts used for managing and treating various ailments, 30% were leaves, 22 % were combinations of leaf and bark, 10 % leaf and fruit, 9 % fruit, 8 % seed, 8 % whole plant, 7 % bark and 6 % bulb (Figure 3). Forty-eight percent of the plants were wild, 43 % cultivated and 9 % cultivated and wild (Figure 4). The relative significance of the plant species as reported from the ethno-botanical survey with their fidelity levels were highlighted.Morindalucida had the highest fidelity level (90.0%) while Burkeaafricanahad the lowest fidelity level (24.0%) (Table 2).

Table 2: List of Medicinal plants used traditionally in managing and treating ailments in Lokoja, Kogi State, Nigeria

S/No	Scientific Name	Family Name	Common Name	Local Name	Growth Habit	Disease Treated	Part Used	Fidelity Level (%)
1	*Lanneaschimperi*	Anacardiaceae		Ewura (Ebira)	Tree	Fever	Bark	66.7
2	*Anacardiumoccidantale*	Anacardiaceae	Cashew	Kaju (Ebira)	Tree	Fever	Bark	50.0
3	*Mangiferaindica*	Anacardiace	Mango	Mangoro	Tree	Fever	Bark	65.0

		ae		(Hausa)				
4	*Annonasenegalensis*	Annonaceae	African custard apple	Ochiku (Ebira)	Shrub	Pile	Leaf	48.9
5	*Calotropisprocera*	Ascleiadaceae	Sodom apple	Omunu (Ebira)	Shrub	Breast pain	Leaf	66.7
6	*Colocaciaesculentum*	Araceae	Cocoyam	Coco (Yoruba)	Herb	Fracture	Leaf	31.4
7	*Ageratum conyzoid*	Asteraceae	Goat weed		Herb	Pain	Leaf	66.7
8	*Acanthospermumhispidum*	Asteraceae	Bristly starbur	Eguniba (Yoruba)	Herb	Pain	Whole	60.0
9	*Aspiliaafricana*	Asteraceae	Haemorrhage plant	Owoznava(Ebira)	Herb	Wound	Whole	71.4
10	*Chromolaenaodorata*	Asteraceae	Siam weed	Akintola (Okun)	Shrub	Wound	Leaf	40.0
11	*Spilanthesfilicaulis*	Asteraceae	Brazil cress	Osete(Ebira)	Herb	Fever	Whole	50.0
12	*Kigeliaafricana*	Bignoniaceae	Sausage tree	Eroebie (Igala)	Tree	Pile	Fruit	33.3
13	*Adansoniadigitata*	Bombaceae	Baobab	Bukochi (Nupe)	Tree	Fever	Bark	66.7
14	*Combretumerythrophyllum*	Combretaceae	Bush-willow	Ubogi (Ebira)	Shrub	Fever	Leaf	33.3
15	*Taminaliacatappa*	Combretaceae	Almond	Ochvori (Ebira)	Tree	Toothache	Root	33.3
16	*Momordicacharantia*	Cucurbitaceae	Bitter gourd	Awara (Yoruba)	Climber	Infertility	Leaf	33.3
17	*Telfairiaoccidentalis*	Cucurbitaceae	Pumpkin	Aworko(Yoruba)	Climber	Anaemia	Leaf	35.0
18	*Jatrophamultifida*	Euphorbiaceae	Barbados	Ochiga (Ebira)	Shrub	Mouth odour	Latex	33.3
19	*Euphorbia hirta*	Euphorbiaceae	Asthma weed	Ireviku (Ebira)	Herb	Stomach ache	Whole	75.0
20	*Phyllantusamarus*	Euphorbiaceae	Hurricane weed	Dariqu (Hausa)	Herb	Hypertension	Whole	66.7
21	*Danieliaoliveri*	Fabaceae	African balsam tree	Usechi (Ebira)	Tree	Fever	Bark	50.0
22	*Acacia nilotica*	Fabaceae	Gum arabic	Ichekene (Ebira)	Tree	Fever	Leaf	28.6
23	*Burkeaafricana*	Fabaceae	Wild syringa	-	Tree	Pile		24.0
24	*Afzeliaafricana*	Fabaceae	Afzelia	-	Tree	Pile	Root	40.0
25	*Parkiabiglobosa*	Fabaceae	Locust	Igba (Igala)	Tree	Hypertension	Seed	75.0
26	*Tectonagrandis*	Lamiaceae	Teak	Ochapapa (Ebira)	Tree	Fever	Root	33.3
27	*Gmelinaarborea*	Lamiaceae	Neem	Ochira (Ebira)	Tree	Fever	Root	25.0
28	*Aliumcepa*	Amaryllidaceae	Onion	Albasa (Hausa)	Herb	Cough	Bulb	58.9
29	*Aliumsativum*	Amaryllidaceae	Garlic	Ayuu (Yoruba)	Herb	Cough	Bulb	66.7
30	*Thespesiagarckiana*	Malvaceae	Fountain	-	Tree	Cough	Leaf	41.4

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			grass					
31	*Gossypiumbarbadense*	Malvaceae	Pima cotton	Owu (Ebira)	Herb	Hypertension	Leaf	66.7
32	*Hibiscus sabdariffa*	Malvaceae	Roselle.	Zobo (hausa)	Herb	Hypertension	Fruit	60.0
33	*Khayasenegalensis*	Meliaceae	African mahogany	-	Tree	Fever	Leaf	71.4
34	*Pennisetumtyphoideum*	Paniaceae	Pearl millet	-	Herb	Fever	Leaf	80.0
35	*Morindalucida*	Rubiaceae	Brimstone tree	Ugugo (Ebira)	Shrub	Typhoid	Leaf	90.0
36	*Nauclealatifolia*	Rubiaceae	African Peach	Obedu (Ebira)	Tree	Fever	Bark	60.0
37	*Crossopteryxfebrifuga*	Rubiaceae	Ordeal tree	Ayeye (Yoruba)	Herb	Pain	Leaf	60.0
38	*Mitrocarpusvillosus*	Rubiaceae	-	Aviagu (Ebira)	Herb	Eczema	Leaf	71.4
39	*Oldenlandiaherbacea*	Rubiaceae	Slender oldenlandia	Ohinehne (Ebira)	Herb	Fever	Leaf	50.0
40	*Citrus limon*	Rutaceae	Lemon	Olombo (Okun)	Tree	Typhoid	Fruit	75.0
41	*Citrus reticulata*	Rutaceae	Orange	Lemu (Hausa)	Tree	Fever	Leaf	75.0
42	*Vitellariaparadoxa*	Sapotaceae	Shear butter	Chamef (Yoruba)	Tree	Hypertension	Seed	80.0
43	*Vitexdoniana*	Verbenaceae	Black plum	Dumniya (Hausa)	Tree	Hypertension	Bark	66.7
44	*Cissusibuensis*	Vitaceae	-	Etine (Yoruba)	Climber	Bone dislocation	Leaf	75.0
45	*Balaniteegyptiaca*	Zygophyllaceae	Desert date	Eguro (Yoruba)	Tree		Leaf	60.0

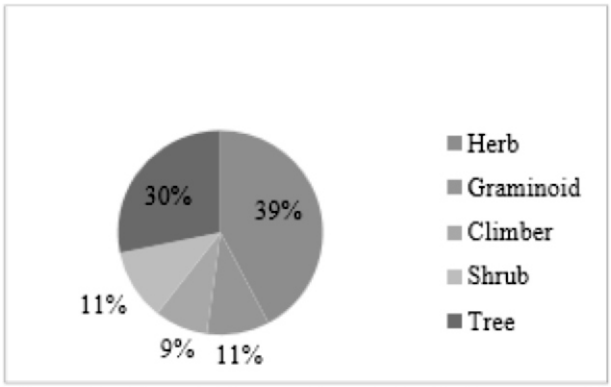

Figure 2: Growth forms of medicinal plants used in managing and treating ailments in Lokoja, Kogi State, Nigeria

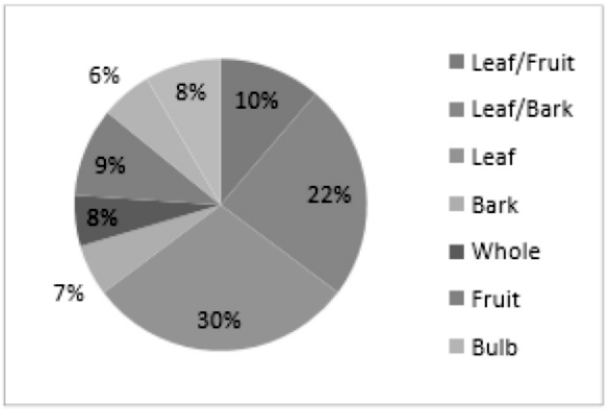

Figure 3: Plant parts used in managing and treating ailments in Lokoja, Kogi State, Nigeria

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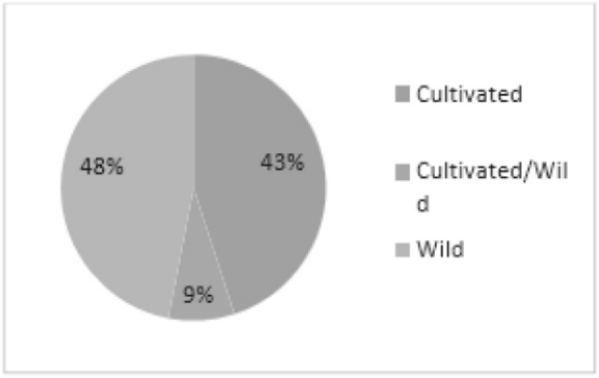

Figure 4: Status of medicinal plants used in managing and treating ailments in Lokoja, Kogi State, Nigeria

4.0 DISCUSSION

From the ethno-botanical survey more females more in the business of herbal medical practice than their male counterparts.This observation agrees with that of Sofidiyaet al. (2007); Durmuskahya and Ozturk (2013) who reported women using more herbal plants than men. This observation however, disagrees with that of Nurudeen, et al. (2013); Kadiriet al. (2015) who observed that more males were in the business of herbal medical practice than females. This disagreement may be due to the differences in the environments or cultures where thesees research were carried out. Majority of the respondents wereelderly people of 41-60 age brackets. This observation concurs with that of Durmuskahya and Ozturk (2013) in which most of the respondents were women aged between 39 and 61 years; Gbadamosi and Egunyomi (2014) in which most respondents were between 40 and 80 years; Kadiriet al. (2015) in which most of the respondents interviewed were between 41 and 50 years and Ogwuet al. (2017) who reported the highest age group of respondents to be between 46 and 55 years. This trend could pose a threat to the sustainability of the knowledge of herbal medicine if the information about the usage of plants is not documented.The society in focus, therefore, stands the risk of losing the ethno-botanical plant knowledge because people of this age bracket are likely to pass away with records herbal usage.Therefore, the traditional uses of plants should be documented before the knowledge vanishes. The fear of the disappearance of the indigenous knowledge of medicinal plants has also been expressed by Kubmarawaet al. (2013). However, the findings of the study of Makindeet al. (2015) suggest that many young people are now developing interest in traditional medicine. Most of the respondents in this study were illiterates (42.2%)who do not have any form of formal education. This report is in agreement with that of Omosun et al. (2013) and Kadiri et al. (2015). Without any form of formal education it could be very difficult for such respondents to have white collar jobs. Herbal medicine, thus, provides a form of employment to them for their livelihood. Some lettered and informed participants advocated the need for government to go beyond formally recognizing herbal medicine practice, to establishing herbal medicine institutes for training traditional medical practitioners and proper regulation of the practice, documentation of knowledge and preservation of valuable plants through intensive conservation. Traditional healers made up a greater number of the respondents 47 (52.2%), indicating a high level of consciousness and engagement in managing and treating the diseases locally when the individuals are afflicted with any. Majority of the respondents got their knowledge through inheritance, showing that transfer of ethno-botanical knowledge is from generation to generation. This observation concurs with that of Amujoyegbaet al. (2016) and Kadiriet al. (2015).The years of experience of the respondents, gives assurance of confiding to a great extent the medicinal potential of the plant species they acclaimed to have pharmaceutical properties.The respondents have strong faith in the curative properties of these plants and thus, their acceptability of these plants as medicinal plants is quite high. It is important for a developing nation like Nigeria to document the uses of medicinal plants which are still largely explored in all its communities. This is because of the old folks are usually custodians of such information and with the fast disappearance of traditional cultures and natural resources arising from urbanization and industrialization of these areas, such information could be lost forever. In the present study, forty five (45) plant species belonging to twenty two (22) families were identified as medicinal plants used for the management and treatment of various diseases and

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ailments in Lokoja, Kogi State. Qureshi et al. (2006) documented 27 plant species used for the treatment of diseases in the Gilgit District and surrounding areas of northern Pakistan. Phondaniet al. (2010) documented 86 plant species from 43 families used in the treatment of 37 ailments by Bhotiya tribal communities of Central Himalaya, India. The use of plant species for domestic needs in Himalayan region of Poonch valley in Pakistan was studied by Khan et al. (2010). The 169 plant species recorded in the study were majorly used for medicines and foods.Muhammad et al. (2013) identified eighty eight (88) plant species belonging to fifty three (53) families used as medicinal plants in Wazir and Daur Tribes of North Waziristan, Pakistan.Sofidiyaet al. (2007) recorded 41 plant species in 23 plant families in a survey of anti-inflammatory plants sold on herb markets in Lagos, Nigeria.In a survey of medicinal plants used for the management and treatment of skin diseases and related ailments, Ajibesin (2012) recorded 183 medicinal plant species from 59 families in AkwaIbom State, Nigeria. Ariwaodoet al. (2012) recorded 98 plant species from 49 familiesin a survey of the Asamagbe stream bank of the Forestry Research Institute of Nigeria (FRIN) in Ibadan, Nigeria, to assess the numerous medicinal plants present in the area.Omosunet al.(2013) recorded 21 plant species belonging to 18 plant families in an ethnobotanical study of medicinal plants useful for malaria therapy in eight Local Government Areas of Abia State, Southeastern, Nigeria. Gbadamosi and Egunyomi (2014) identified 65 plant species belonging to 38 plant families in an ethno-botanical survey of plants used for the treatment and management of sexually transmitted infections in Ibadan. Kadiriet al. (2015) reported 50 plant species belonging to 30 plant families in an ethno-botanical survey of plants used in the management of diabetes mellitus in Abeokuta. Makindeet al. (2015) identified 107 plant species belonging to 56 families used for obesity, asthma, diabetes and fertility.Dluyaet al. (2015)identified 15 plant species belonging to 11 plant families in a survey on some indigenous selected medicinal plants used for treatment of malaria in Sangere, Girei Local Government Area of Adamawa State. Abubakaret al. (2016) identified forty (40) plant species belonging to twenty two (22) families for the treatment of malaria in Kano metropolis.Ogwu et al. (2017) recorded 36 plants species belonging to 25 plant families in an ethno-botanical survey of medicinal plants used for traditional reproductive by Usen people of Edo State. The differences in the number of plant species and plant families could be due to the study area, cultural, social and economic background of the people. The diversity of plants identified on the basis of information collected from respondents is an indication that the people are versatile in the use of medicinal plants. Medicinal plants therefore constitute the largest category of biodiversity used by people. Morindalucida, Pennisetumtyphoideum, Vitellariaparadoxa, Euphorbia hirta, Parkiabiglobossa, Cituslimon, Citrusreticulata, Cissusibuensis, Mitrocarpusvillosusand Aspilia Africana all with fidelity levels of 70% and above could be considered as promising candidates for further scientific validation in the search for new, effective and affordable drugs.These medicinal plants are thus a potential source of new and novel biologically active compounds. The families, Asteraceae, Fabaceae and Rubiaceaeprovided the highest proportion of medicinal plants, making up 33.3 % of the total plants collected. Previous studies also indicate that the families Asteraceae and Fabaceaehave many species of medicinal plants used in the management and treatment of various ailments (Makindeet al., 2015; Abubakaret al., 2016).Sofidiyaet al. (2007) reported Sapindaceae as the most predominant family having five plant species. Gbadamosi and Egunyomi (2014) reported the families Fabaceae and Apocynaceaeto have the highest number of species. Kadiriet al. (2015) reported the plant families Asteraceae and Apocynaceae with the highest occurrence of four species each, followed by Cucurbitaceae, Malvaceae and Poaceae having three species each.Ogwuet al. (2017) reported family Malvaceae as the dominant plant family with four representative species. This suggests the importance of these plant families as repository of useful plants which may be explored for the treatment and management of various diseases and ailments. Most of the plantspecies identified in this study have been cited andconfirmed as medicinal plants in other parts of Nigeriaby previous researchers in those areas and could be described as

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rear or novel plants for managing and treating certain ailments and these include; Anarcadiumoccidentale, Annonasenegalensis, Acacia nilotica, (Aiyeloja and Bello, 2006;Sofidiyaet al., 2007; Nurudeenet al., 2013;Gbadamosi and Egunyomi (2014); Kadiriet al. (2015); Makindeet al., 2015; Amujoyegbaet al., 2016; Abubakaret al., 2016; Ogwuet al., 2017).The plants form part of the untapped plant genetic resources or germplasm in Lokoja and environs, with their potential medicinal values. The most frequently employed life form of plants covered in this study was herbs. Similar observation was reported by Rautet al. (2012); Gbadamosi and Egunyomi (2014); Kadiri et al. (2015) and Ogwuet al. (2017).This frequent and common used of herbs might have informed the use of the name herbal medicine and herbalists to describe the trade and professionals of the trade respectively. However, the prevalence of shrubs and trees in recipes of traditional herbal medicineis an indication that the people are conversant with the use of higher plant prescriptions. Indeed, higher plants have been described as the "sleeping giant" of drug development (Gbadamosi and Egunyomi, 2014). The traditional medicine practitioners indicated in the survey that majority of the plant resources which they used for the treatment and management of various ailments are tapped from plant leaves.The leaves formed the most frequently used plant parts in the management and treatment of various ailments in Lokoja. This observation is in conformity with the finding of Sofidiyaet al. (2007); Omosunet al.(2013); Muhammad et al. (2013); Gbadamosi and Egunyomi (2014); Kadiriet al.(2015); Makindeet al. (2015); Dluyaet al.(2015): Ogwuet al. (2017). The plant leaves are important ingredient in traditional treatment of various diseases as it occurred as a component in many herbal preparations. The use of leaves could be justified by the abundanceof chemical groups they contain. In fact, leaves are known as main synthesis sites of secondary metabolites in plants and are the most commonly used plant parts by traditional medicine practitioners.The leaves are regenerative and their use in recipes offers the advantage in sustainable use of biodiversity over roots and whole plants.

Of the forty five plants species yielded from the ethno-botanical survey, the percentage composition of wild species was highest followed by cultivated species and wild/cultivated species. The indiscriminate tapping and destruction of plants particularly the wild forms, pose a threat to the sustainability of the potential medicinal plants. In Lokoja, there is poor consideration for preservation and conservation of medicinal plantspecies, particularly the wild species. These plants are usually exploited indiscriminately, with little or no consideration for regeneration. If this practice is allowed to continue unchecked, it could result in the extinction of some of the plant species in the nearest future. Morindalucida of the family Rubiaceae had the highest fidelity level of 90.0%and had the highest frequency of citation among the plants used by the herbal practitioners. This supports the efficacy of the plant in the management and treatment of diseases and ailments in Lokoja. Kadiriet al. (2015) reported Vernoniaamygdalinaas the most frequently used plant species in the management of diabetes mellitus in Abeokuta. Gbadamosi and Egunyomi (2014) reported Citrulluslanatusas the most frequently used plant species for the treatment of sexually transmitted inections in Ibadan. Researchers opined that knowing the fidelity level of a plant might lead to the idea of the use reliability and pharmacological features of taxonomically related medicinal plants (Cakilcioglu and Turkiglu, 2010). Reports from respondents show that the multi- component nature of recipes improves the efficacy through the synergism of the activity of various components or parts put together for ensuring better cure of different ailments. The combination of different plants and parts in the preparation of herbal remedy appears to be a common practice in traditional herbal medicine and it is believed that some plants and parts enhance the action of other herbs. Polyherbal therapy is said to be a current pharmacological principle having the advantage of producing maximum therapeutic efficacy with minimum side effects. Polyherbal therapies have the synergistic and agonistic/antagonistic pharmacological agents within themselves that work together in a dynamic way to produce therapeutic

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efficacy with minimum side effects (Muhammad et al., 2013; Makindeet al., 2015; Abubakaret al., 2016). Their solvent of extraction was commonly water and their methods of extracting the active ingredients included but not limited to infusion, decoction and concoction.Sofidiyaet al. (2007) reported water as the commonly used solvent, decoction and infusion as common methods of drug preparation and oral and topical routes of drug administration. Omosunet al. (2013) recorded water and alcohol as the main solvents and maceration, decoction, infusion and concoction as methods of preparation. Muhammad et al. (2013) reported the recipes to include decoctions, poultices, infusions, extracts and powders. Makindeet al. (2015) reported decoction and infusion as the most popular modes of preparation and oral and topical administrations as the most common routes of administration. Kadiriet al. (2015) reported waterand alcohol as main solvents, decoction and infusion as the modes of herbal preparation. Dluyaet al. (2015) reported water as the common solvent used and decoction as the preferred method of herbal preparation and the oral route of drug administration, followed by inhalation of steam. Abubakaret al. (2016) reported that decoction and infusion were the main methods of preparation and that the traditional solvent of choice was water. Some of the informants opposed to divulging information about the plants which they use in treating diseases for fear of losing patronage and consequently income, and some claimed thatrevealing intellectual property is against their ancestral will.

5.0 CONCLUSIONS

This research divulged high profile information from the participants during the ethno-botanical survey which indicates that more females are into the business of herbal medical practice than males.Majority of the respondents who participated in the survey were elderly people, illiterates and traditional healers who have more knowledge of herbal medicine and the major source of their knowledge was inheritance.Forty-five plant species belonging to 22 plant families especially the families Asteraceae, Fabaceae and Rubiaceaein
Lokoja and environs are used for managing and treating various ailments.Herbs were the most commonly used plant life forms, leaves the most commonly used plant parts and most of the plants used as medicine were still in their wild state.Morindalucidahad the highest fidelity level and is thus, the most commonly used plant species.

5.0 RECOMMENDATIONS

Instead of relying on informants for information, further research could be conducted on these plants in order to identify and isolate their medicinal properties. This will go a long way in boosting our pharmaceutical industries by providing them with the needed raw materials for the formulation of new drug. This is because most old drugs are becoming obsolete and been resisted by a number of pathogens.The plants which have not been scientifically evaluated could be subjected to pharmacological activity assay to ascertain the claims of the traditional healers. The knowledge of ethno-botanical plants should be passed on from generation to generation via inheritance or apprenticeship. Most of the plants identified as medicinal plants in this study grow in the wild and the effects of the numerous human activities in an attempt to exploit natural resources constitute a big problem in the destruction of these plants. There is thus, an urgent need to map out strategies for the conservation of these plants, to avoid their extinction in the nearest future.

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