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Medicinal Plants Used to Treat Sexual Diseases by Ogba/Egbema/Ndoni Ethnics of Rivers State, Nigeria

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ABSTRACT

In our study, an inventory was carried out of plants used in managing sexual diseases by Ogba/Egbema/Ndoni tribal people in Rivers State, Nigeria. Ten (10) communities (Kreigani, Odugili, Oboh, Agah, Obakata, Obirikom, Ndoni, Agwe, Egbema and Omoku) were randomly selected within the ethnic clan for the study. Structured pre-tested questionnaires were then administered among Traditional Medicine Practitioners (TMPs), Traditional Birth Attendants (TBAs), herb vendors and knowledgeable individuals. In all, 111 randomly selected informants were interviewed. The collected data was analysed using descriptive statistics and utilization tables. Accordingly, males constituted 50.5% and females 49.5% of the studied population, and a majority of the respondent were subsistent farmers (50.5%), petty traders (22.5%), TBAs (10.8%), TMPs (9.9%) and herb vendors (0.9%). Prevalent health conditions were categorized into twelve areas (miscarriage, menstrual disorder, hernia and weak erection, among others). As a result of the work, taxonomic diversity showed 119 medicinal plants species, belonging to 47 families and 71 genera. Most cited plant families were Malvaceae (7 species) and Fabaceae (6 species). The plant parts that were mostly used were the leaves (52.28 %), roots (37.54 %) and barks (3.86%). This study shows that rural inhabitants still rely on traditional medicine for health care needs, and that many of the medicinal plants should undergo research for future drug development and conservation.

Keywords: Medicinal plants, reproductive diseases, indigenous knowledge, Ogba/Egbema/Ndoni ethnics, Nigeria

1. INTRODUCTION

Therapeutic use of local plant resources for healing has been an age long practice and its roots traced to ancient civilizations [1]. Tropical regions globally are endowed with rich

source of medicinal plants which have been used in history for health care particularly in the rural areas. Understanding indigenous knowledge of medicinal plants can be valuable resources for health care management and development. Modern health care delivery is quite expensive and usually beyond the reach of many in the developing West Africa, their resort to herbal medicines is justifiable [2].

Sexually related diseases have been observed to be second most prevalent diseases [3]. Many sexually related ailments are being treated with locally available medicinal plants among rural populations in Africa, such as menstrual disorders, fertility problems, leucorrhoea and womb problems [4]. In a survey conducted in Nigeria, more than 54% of males with STDs were observed to contact traditional healers for treatment [5, 6].

The African continent has a long history with the use of plants for medicinal purposes, up to 80% of the population use herbal medicine for primary healthcare [7]. Diallo and Paulsen [8] reported that 80% of the population in Mali uses traditional medicine as their only type of medicine. In Nigeria, ethno-botanical investigations have shown that substantial numbers of people utilize traditional medicine for a variety of diseases associated with reproductive health. These includes, abortion, low sperm count, menstrual disorders, loss of libido and erectile dysfunction, menstrual pain, gonorrhoea, bleeding during pregnancy, contraception and breast problems [9, 10].

This is due to high cost of pharmaceuticals and modern healthcare delivery; lack of access to modern medical facilities and because traditional medicines are more acceptable from a cultural and spiritual perspective by the people.

For most ethnic group in Nigeria, the rich indigenous knowledge on medicinal plants species used in managing reproductive diseases is poorly documented or passed to generations verbally. The Traditional Medicine Practitioners (TMPs) who are the store house of indigenous knowledge on the healing powers of plants are growing old and passing away without proper documentation of useful medicinal plants. Natural forests (home of these important resources) are also disappearing at an alarming rate in Africa due to overexploitation of wild populations and lack of well - coordinated conservation programmes [11].

Previous studies [12-14] on ethno-botanical survey of medicinal plants used in reproductive diseases conducted in Nigeria were focused in other parts of the country and centered on women. There is paucity of work that focused on plants used for male and female reproductive diseases in Rivers State, Nigeria. This study surveyed and documented the medicinal plant species used by Ogba/Egbema/Ndoni ethnic people of Rivers State for the treatment of sexually related diseases in males and females, the plant parts and forms in which they are administered as well as the perceived conservation status of the medicinal plants in different communities of the study areas were also documented.

2. MATERIALS AND METHOD

2. 1. Study Area

The study site, Ogba/Egbema/Ndoni Local Government Area (ONELGA) is one of the 23 Local Government Areas (LGA) in Rivers State created out of the former Ahoada LGA on September 21, 1991. ONELGA occupies a land mass of 1,621 square kilometers with a population of 283,294 people residing across the various communities. It lies between

Latitude 5°25N and Longitude 3°14E and is located at the extreme North-Western fringe of Rivers State. The people are predominantly subsistence farmers and petty traders/artisans.

2. 2. Data Collection and Analysis

A set of well-structured and pre-tested questionnaire was administered to Traditional Medicine Practitioners (TMPs), Traditional Birth Attendants (TBAs), herb vendors and knowledgeable individuals on medicinal plants in the communities. Data for the study was collected through personal interview, focus group discussion with (TMPs, TBAs, herb vendors, aged people and youths) and field observation with TMPs and TBAs for proper identification and collection of plant specimens. Ten (10) communities (Kreigani, Odugili, Oboh, Agah, Obakata, Obirikom, Ndoni, Agwe, Egbema and Omoku) were randomly selected within the LGA for the study. In all, 111 TMPs, TBAs and verb vendors were purposively selected based on their availability in each community: Omoku (18), Egbema (13), Ndoni (13), Odugili (13), Agah (11), Kreigani (11), Agwe (9), Obirikom (9), Obakata (9) and Oboh (5). Data collected was analyzed using descriptive statistics, utilization tables and use citation.

3. RESULTS

The demography of the respondents is shown in Table 1. Males constitute 50.5%, while females constitute 49.5%. Age of respondents was between 20 years (0.9%) to above 60 years (11.7%). Substantial number of respondents had at least primary education (51.4%), while only 8.1% had no formal education. They were majorly subsistence farmers (50.5%), petty traders (22.5%), TBAs (10.8%), TMPs (9.9%) and herb vendors (0.9%).

Table 1. Demography of Respondents on Plants used to treat Reproductive Diseases among Ogba/Egbema/Ndoni Ethnics, Rivers State, Nigeria

Demographic character		Frequency	Percent
Sex	Male	56	50.5
	Female	55	49.5
	Total	111	100.0
Age	below 20	1	0.9
	20-30	17	15.3
	31-40	19	17.1
	41-50	25	22.5
	51-60	36	32.4
	above 60	13	11.7
	Total	111	100.0
Marital status	single	26	23.4
	married	58	52.3
	widow(er)	27	24.3
	Total	111	100.0
Family size	below 5	13	11.7

	5-10	92	82.9
	above 10	6	5.4
	Total	111	100.0
Education qualification	no formal education	9	8.1
	primary school	57	51.4
	secondary school	37	33.3
	tertiary	8	7.2
	Total	111	100.0
Occupation	Farming	56	50.5
	Trading	25	22.5
	TBA	12	10.8
	TMP	11	9.9
	Herb vendor	1	0.9
	Artisan	2	1.8
	Others	4	3.6
	Total	111	100.0

Source: Field survey, 2016

3. 1. Supply Sources of Medicinal Plants

Fig. 1 showed the supply sources of the medicinal plants in the local communities. A good number (77) obtain medicinal plants from the wild while others (34) cultivate medicinal plants in their home premises and also source from the wild.

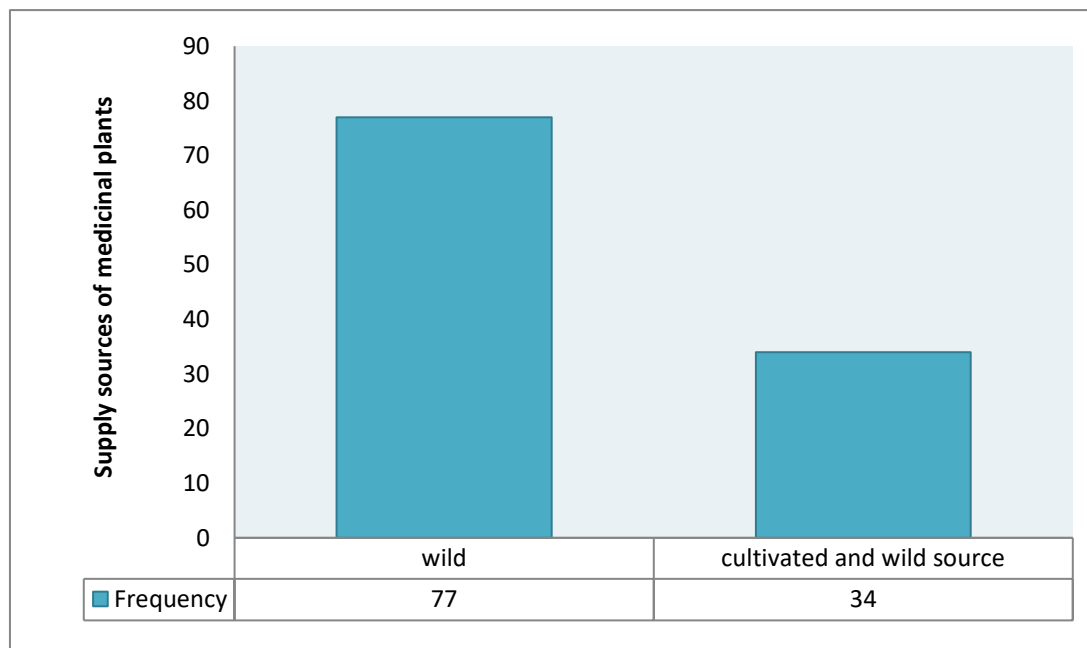


Figure 1. Supply sources of medicinal plants among Ogba/Egbema/Ndoni Ethnics

Source: Field survey 2016

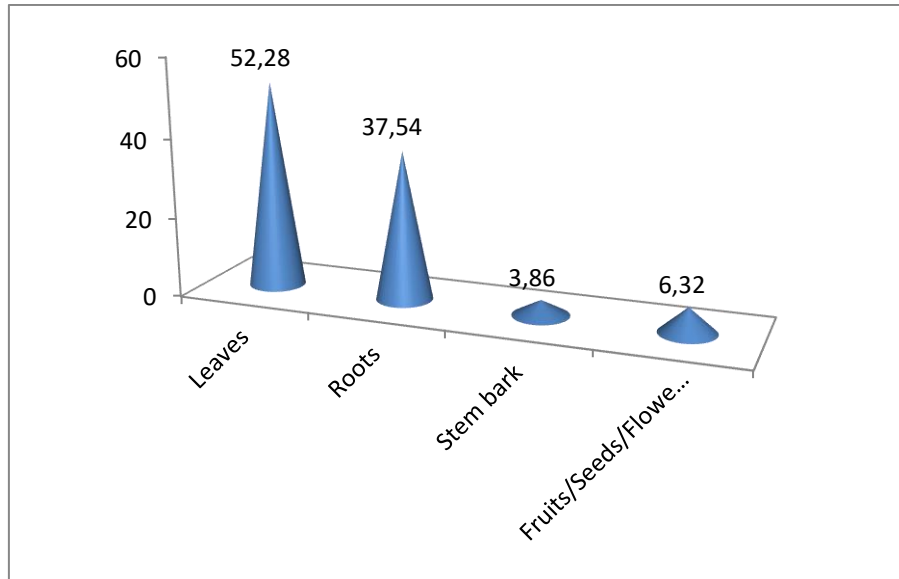


Figure 2. Plant parts (Percentages) used for medicine among Ogba/Egbema/Ndoni Ethnic groups
Source: Field survey 2016

Table 2. Ethno-medicinal Utilization of Plants in the Management of Reproductive Ailments by Ogba/Egbema/Ndoni Ethnic groups

S/N	Disease Category	Plant Name (Family)	Local Name	Part Used	Preparation	Mode of Administration	Citation
1	Miscarriage	<i>Cola milenii</i> (Sterculiaceae)	Orji-umu-aka	Root	The root is combined with dry bamboo root and mixed with dry gin	One shot is drunk from the first month to the fourth month of conception twice daily	3
				Leaf	Leaf is pound and mixed with palm kernel oil	One tea spoon thrice daily	14
		Leaf is squeezed with charcoal and extracted with dry gin	One shot twice daily				
		Leaf is pound with native chalk and extracted with water	One cup twice daily				
		Leaf and <i>Piper guineense</i> seed is cooked	One cup thrice daily				
		<i>Chromolaena odorata</i> (Asteraceae)	Awolowo (siam weed)				

			Leaf is pound and extracted with water	One cup thrice daily for 5 month	
<i>Phyllanthus amarus</i> (Phyllanthaceae)	Okon-nwa	Leaf	Leaf is pound and cooked with salt, pepper and one snail	Eaten once	1
<i>Albizia zygia</i> (Fabaceae)	Okutata	Root	Root is pound and extracted with palm wine	Half tumbler twice daily	1
<i>Tridax procumbens</i> (Asteraceae)	Ehia-isi	Leaf	Leaf is pound and extracted with water	Half tumbler thrice daily	9
<i>Nephrolepis bisserata</i> (Dryopteridaceae)	Ebu-he	Leaf	Leaf is cooked	One cup thrice daily	1
<i>Anthonotha macrophylla</i> (Fabaceae)	Ichoku	Leaf	Leaf is cooked	One cup thrice daily for 3 months	1
<i>Palisota hirsuta</i> (Commelinaceae)	Npuruku-ezi	Root	Root and <i>Chromolaena odorata</i> root is extracted with dry gin	One shot thrice daily	2
		Leaf	Leaf is pound and extracted with warm water	One cup twice daily	
<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Leaf	Leaf is pound and extracted with water	One cup once daily	2
<i>Alchornea laxiflora</i> (Euphorbiaceae)	Ukrobi	Leaf and root	Leaf and root is cooked	One cup twice daily	2
		leaf	Leaf is cooked in palm-wine	One cup twice daily	
<i>Abrus precatorius</i> (Fabaceae)	Chanchan golo	Root	Leaf and <i>Dacryodes edulis</i> leaf cooked	One cup twice daily	1
<i>Solenostemum monostacyous</i> (Lamiaceae)	Akita-buribor	Leaf	Leaf is pound and extracted with warm water	One cup twice daily	3
			Leaf, <i>Piper guineense</i> and <i>Dacryodes edulis</i> and leaves are cooked	One cup twice daily	
<i>Anthocleista vogelii</i> (Loganiaceae)	Okokwor	Leaf	Leaf cooked with salt	One cup thrice daily	1
<i>Jatropha curcas</i> (Euphorbiaceae)	Obor-kancha	Leaf	Leaf is pound and extracted with dry gin	One shot thrice daily	2
<i>Ficus exasperata</i> (Moraceae)	Ogbo-wura-wura	Leaf	Leaf is pound and extracted with water	One cup twice daily	1

		<i>Smilax anceps</i> (Smilacaceae)	Akirakira	Root and leaf	Root is cooked	One cup thrice daily	1	
		<i>Bryophyllum pinnatum</i> (Crassulaceae)	Ndeta-eyiamini	Leaf	Leaf, <i>Chromolaena</i> leaf and <i>Xylopi aethiopica</i> seed are pound and cooked	One cup thrice daily	1	
		<i>Gossypium arboreum</i> (Malvaceae)	Owu	Leaf and leaf	Leaf and root are cooked	One cup thrice daily	1	
		<i>Ipomoea involucrata</i> (Convolvulaceae)	Ogba-loyibo	Leaf	Leaf is pound and extracted with water. Salt is added to the decoction	One cup twice daily	1	
2	Gonorrhoea	<i>Azadirachta indica</i> (Meliaceae)	Dogoyaro	Root	Roots is cooked and mixed with honey	Half tumbler thrice daily	1	
		<i>Combretum micranthum</i> (Combretaceae)	Abiogu	Stem	Stem is cut into smaller pieces and extracted with dry gin	One shot twice daily	4	
					Root is extracted with palm-wine	One cup twice daily		
		<i>Nephrolepis bisserata</i> (Dryopteridaceae)	Ebu-uhe	Leaf	Leaf, pepper and <i>Piper guineense</i> seed is extracted with dry gin	One shot thrice daily	1	
		<i>Rauwolfia vomitoria</i> (Apocynaceae)	Akata	Root		Root is extracted with dry gin	One shot twice daily	6
						Root is extracted with dry gin	One shot twice daily	
		<i>Newbouldia laevis</i> (Bignoniaceae)	Ukeshi	Roots	Root is extracted with dry gin	One shot thrice daily	2	
		<i>Sida acuta</i> (Malvaceae)	Ogo-thorlin	Root	Root and onion is extracted with dry gin	One shot thrice daily	1	
		<i>Cenchrus biflorus</i> (Poaceae)	Ehia-army	Root	Root extracted with dry gin	One shot thrice daily	1	
		<i>Milicia excelsa</i> (Moraceae)	Orji	Root and leaf	Root and leaf are extracted with dry gin	One shot thrice daily	5	
		<i>Dracaena mannii</i> (Asparagaceae)	Ikiremondu	Root		Root is extracted with dry gin	One shot twice daily	2
						Root and a bulb of onion is extracted with dry gin	One shot twice daily	
<i>Centrosema pubescens</i> (Fabaceae)	Ukasi-nwa-ewo	Leaf	Leaf is boiled	One cup twice daily	1			
<i>Bambusa vulgaris</i> (Poaceae)	Okuther	Root	Root is extracted with dry gin	One shot twice daily	2			

	<i>Nauclea latifolia</i> (Rubiaceae)	Ubormini	Leaf	Leaf is burnt to ashes and mixed with honey	One table spoon twice daily	1
	<i>Chromolaena odorata</i> (Asteraceae)	Awolowo	Leaf	Leaf cooked and mixed with honey	One cup twice daily	2
	<i>Alchornea spp</i> (Euphorbiaceae)	Aborsi	Root	Root is extracted with dry gin	One shot twice daily	2
	<i>Scoparia dulcis</i> (Plantaginaceae)	Eza-dibia	Root and leaf	Leaf and root is extracted with dry gin	One shot twice daily	1
	<i>Spondias mombin</i> (Anacardiaceae)	Ijikirika	Root	Root and <i>Piper guineense</i> seed are extracted with dry gin	One shot twice daily for a month	6
			Leaf	Leaf is cooked	One tumbler twice daily	
	<i>Anthocleista vogelii</i> (Loganiaceae)	Okor-ekwor	Root	Root and <i>Piper guineense</i> seed are extracted with dry gin	One shot twice daily for a week	4
				Root is extracted with palm-wine	One tumbler twice daily	
	<i>Chrysophyllum albidum</i> (Sapotaceae)	Udara	Root	Root is extracted with dry gin	One shot twice daily	1
	<i>Dracaena mannii</i> (Asparagaceae)	Ikremondu	Root	Root is cooked	One cup thrice daily	2
	<i>Pycnanthus angolensis</i> (Myristicaceae)	Uturu	Leaf	Leaf is burnt and mixed with kernel oil	One tablespoon thrice daily	1
	<i>Sclerocarpus africanus</i> (Asteraceae)	Oso-ali	Leaf	Leaf is burnt and mixed with palm kernel oil	One tablespoon twice daily for a month	1
	<i>Gossypium arboretum</i> (Malvaceae)	Owu (wool)	Root	Root, onions and <i>Xylopi</i> a seed are extracted with dry gin	One shot twice daily	1
	<i>Abrus precatorius</i> (Fabaceae)	Chanchangolo	Roots and leaf	Roots and leafs are cooked	One tumbler twice daily	1
	<i>Costus afer</i> (Costaceae)	Oputo	Leaf	Leaf is cooked	One tumbler twice daily	1
	<i>Nicotiana tabacum</i> (Solanaceae)	Tobacco	Leaf	Leaf, ginger, garlic, wonderful kola and potash is extracted with dry gin	One shot twice daily	1

		<i>Gongronema latifolium</i> (Asclepiadaceae)	Utazi	Root	Leaf is soaked in water for 3 days	Half tumbler once daily	1
		<i>Cola milenii</i> (Sterculiaceae)	Orjimuaka	Root	Root is burnt and mixed with honey	One tablespoon twice daily	1
		<i>Cenchrus biflorus</i> (Poaceae)	Ehia-army	Root	Root and head of cock is cooked in palm-wine	One cup twice daily	1
3	Obstetrical haemorrhage	<i>Phyllanthus amarus</i> (Phyllanthaceae)	Okon-nwa	Leaf	Leaf is pound and cooked with salt and pepper	One cup twice daily	4
		<i>Alchornea cordifolia</i> (Euphorbiaceae)	Ubeh	Leaf	Leaf is cooked	One cup thrice daily	1
		<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Leaf	Leaf is cooked	One cup thrice daily	2
		<i>Dracaena mannii</i> (Asparagaceae)	Ikremodun	Leaf	Leaf is pound and extracted with malt drink	One cup once daily	1
		<i>Citrus sinensis</i> (Rutaceae)	Orange	Fruit	The juice from the fruit is extracted and mixed with milk	One cup twice daily	1
		<i>Bryophyllum pinnatum</i> (Crassulaceae)	Ndeta-eyamini	Root	Root is cooked	One cup thrice daily. Bath with the decoction twice daily	1
		<i>Tridax procumbens</i> (Asteraceae)	Eyasi	Leaf	Leaf is squeezed and extracted with water. Salt is added to the decoction	One cup twice daily	1
		<i>Ipoemia convolvucrta</i> (Convolvulaceae)	Eka-tor	Leaf	Leaf is squeezed and extracted with water. Salt is added to the decoction	One cup twice daily	1
		<i>Cleome ciliata</i> (Cleomaceae)	Eka-etor	Leaf	Leaf is pound and extracted with water	One cup twice daily	1
		<i>Dissotis rotundifolia</i> (Melastomataceae)	Chichi-rimini	Leaf	Leaf is pound. One snail, yam and the leaf is cooked	Dish eaten once	1
		<i>Cleome gigantia</i> (Cleomaceae)	Awalasi	Leaf	Leaf is pound and extracted with water	One cup twice daily	1
		<i>Psidium guajava</i> (Myrtaceae)	Guava	Leaf	Leaf is squeezed and extracted with water.	One cup once in 3 days	1
		<i>Alchornea laxiflora</i> (Euphorbiaceae)	Ukrobi	Leaf	Leaf is pound and mixed with water	One cup thrice daily	1

4	Menstrual pain	<i>Chromolaena odorata</i> (Asteraceae)	Awolowo (siam weed)	Leaf	Leaf is cooked with salt	One cup twice daily	13
					Leaf and dry pepper is cooked	One cup daily	
Leaf is pound and extracted with water	One cup twice daily						
Leaf is pound with charcoal and extracted with dry gin	One shot twice daily						
Root	Root is pound with native chalk and extracted with dry gin			One shot twice daily			
Root	Root and gbangbamlukela root is extracted with dry gin	One shot twice daily					
		<i>Carica papaya</i> (Caricaceae)	Pawpaw	Dry leaf	Leaf is cooked	One cup twice daily	3
					Leaf is dried and pound into powder form. It is extracted with hot water	One teacup in the morning and evening	
		<i>Bryophyllum pinnatum</i> (Crassulaceae)	Ndeta-eya-mini	Leaf	Leaf is pound with salt and extracted with water	One cup twice daily	1
		<i>Solanum nigrum</i> (Solanaceae)	Apie	Leaf	Leaf is squeezed and extracted with warm water	One cup twice daily	1
		<i>Nauclea latifolia</i> (Rubiaceae)	Uburumini	Root	Root is extracted with dry gin	One shot twice daily	4
				Leaf	Leaf is cooked	One cup twice daily	
		<i>Jatropha curcas</i> (Euphorbiaceae)	Oboh-kancha	Leaf	Leaf is pound and extracted with warm water	One cup twice daily	1
		<i>Anthonotha macrophylla</i> (Fabaceae)	Icheoku	Root	Root is extracted with dry gin	One shot twice daily	1
		<i>Pentaclethra macrophylla</i> (Fabaceae)	Ubakiri	Roots	Root is extracted with palm wine	One cup daily	2
				Leaf	Menstrual pain	Leaf is cooked	
<i>Citrus sinensis</i> (Rutaceae)	Obor	Root	Root and Xylophia seed are pound and extracted with dry gin	One shot twice daily	1		
<i>Newboldia laevis</i> (Bignoniaceae)	Ukesi	Root	Leaf is cooked	One cup thrice daily for 3 weeks	2		

		<i>Alchornea cordifolia</i> (Euphorbiaceae)	Ubeh	Leaf	Leaf and potash is cooked	One cup twice daily	4
				Root	Root is extracted with dry gin	One shot twice daily	
		<i>Justicia carnea</i> (Acanthaceae)	Oso-afia	Root	Root and <i>Chrysophyllum albidum</i> root is cooked	One cup thrice daily for a month	1
		<i>Culcasia scandens</i> (Araceae)	Oso-abanali	Leaf	Leaf is cooked	One cup thrice daily	2
		<i>Gossypium arboretum</i> (Malvaceae)	Owu	Leaf	Leaf is burnt to ashes and mixed with olive oil	One tablespoon twice daily	3
				Leaf and root	Leaf and root is cooked	One cup thrice daily	
		<i>Colocasia esculenta</i> (Araceae)	Edeh	Leaf	Leaf is cooked	One cup every morning	2
		<i>Cola milenii</i> (Malvaceae)	Oji-muaka	Leaf	Leaf is extracted with dry gin	One shot twice daily	1
		<i>Crinum jagus</i> (Amaryllidaceae)	Onions-ali	Leaf	Leaf and wonderful kola is extracted with dry gin	One shot in the morning before eating	1
		<i>Urena lobata</i> (Malvaceae)	Upor	Bark	Bark is pound with salt and extracted with dry gin	One shot twice daily	2
				Leaf	Leaf is cooked with salt	One cup thrice daily	
		<i>Sclerocarpus africanus</i> (Asteraceae)	Oso-ali	Leaf	Leaf, <i>Piper guineense</i> and <i>Xylopi aethiopica</i> are pound and extracted with dry gin	One shot twice daily	2
		<i>Ocimum gratissimum</i> (Lamiaceae)	Ureh	Leaf	Leaf is pound and extracted with water	One cup twice daily	1
		<i>Abrus precatorius</i> (Fabaceae)	Chanchan golo	Leaf	Leaf is extracted with dry gin	One shot thrice daily	1
		<i>Sida acuta</i> (Malvaceae)	Orgortoli	leaf	Leaf is pound and extracted with water. Salt is added to the decoction	One cup twice daily	2
<i>Hibiscus rosa sinensis</i> (Malvaceae)	Hibiscus flower	Leaf	Leaf is squeezed and extracted with water. Salt is added to the decoction	One cup twice daily	1		
5	Difficulty to conceive	<i>Phyllanthus amarus</i> (Phyllanthaceae)	Okon-nwa	Leaf	Leaf is pound and cooked with salt, pepper and one snail	Eaten once	1
		<i>Tridax procumbens</i> (Asteraceae)	Ehia-isi	Leaf	Leaf is pound and extracted with water	One cup twice daily	1

6	Hotness of the womb	<i>Senna alata</i> (Fabaceae)	Ogbe-ewa	Leaf	Leaf is cooked with salt	Half tumbler twice daily	3
		<i>Costus afer</i> (Costaceae)	Obuto (bush sugarcane)	Stem	Stem is pound with nzu and extracted with water	One cup twice daily	1
		<i>Chromolaena odorata</i> (Asteraceae)	Awolowo	Leaf	Leaf is cooked	One cup twice daily	9
					Leaf is pound and extracted with warm water	One cup once daily	
		<i>Ficus exasperata</i> (Moraceae)	Ogbo-wura-wura	Leaf	Leaf is pound and extracted with water	One cup twice daily	3
		<i>Icacina trichantha</i> (Icacinaceae)	Eru-ukazi	Leaf	Leaf is pound and extracted with water	One cup twice daily	1
7	Vaginal infections (rashes on vagina, etc.)	<i>Eleusine indica</i> (Poaceae)	Igeta	Leaf and root	Leaf and roots with ginger and garlic are cooked	Half tumbler twice daily	1
		<i>Pentaclethra macrophylla</i> (Fabaceae)	Ubakirie	Bark	The bark is burnt and mixed with honey	One teaspoon thrice daily	1
		<i>Dracaena mannii</i> (Asparagaceae)	Ikirimondu	Root	Root and <i>Xylopi</i> a seed is extracted with dry gin	One shot twice daily	1
		<i>Costus afer</i> (Costaceae)	Oputo	Stem	Stem and nzu salt extracted with dry gin	Rubbed on the lower abdomen	2
				Leaf	Leaf is cooked	One cup twice daily	
		<i>Newboldia laevis</i> (Bigniniaceae)	Ukesi	Leaf	Leaf and Piper seed is cooked	One cup twice daily	1
		<i>Urena lobata</i> (Malvaceae)	Upor	Bark	Bark is burnt into ashes and mixed with kernel oil	It is applied on the private part twice daily	2
		<i>Palisota hirsuta</i> (Commelinaceae)	Npuruku-ezi	Root	Root is extracted with dry gin	One cup twice daily	1
		<i>Buchholzia coriacea</i> (Capparaceae)	Wonderful kola	Nut	<i>Buchholzia coriacea</i> and <i>Xylopi</i> a seed is extracted with dry gin	One shot twice daily	1
<i>Combretum micranthum</i> (Combretaceae)	Abiogugu	Roots	Root is cooked	One cup is drank twice daily	2		

8	Weak erection	<i>Azadirachta indica</i> (Meliaceae)	Dogoyaro	Leaf	Leaf is cooked with garlic	Half tumbler thrice daily	2
					Leaf is pound and extracted with dry gin	One shot twice daily. To be taken alongside an infection medicine	
		<i>Urena lobata</i> (Malvaceae)	Nubor	Root	Root is extracted with dry gin	One shot thrice daily	3
					Root and garlic is burnt and mixed with kernel oil	One tablespoon thrice daily	
		<i>Newbouldia laevis</i> (Bignoniaceae)	Ukesi	Leaf	Leaf is pound with charcoal and extracted	One shot twice daily	2
		<i>Vernonia amygdalina</i> (Asteraceae)	Ulubu	Leaf	Leaf is pound and extracted with water	One cup thrice daily	1
		<i>Musa paradisiaca</i> (Musaceae)	Alekwor (plantain)	Root	Root is cooked with palm-wine	One cup twice daily	1
		<i>Smilax anceps</i> (Smilacaceae)	Akirakira	Leaf	Leaf is burnt with okuromocha fish into ashes	Incisions are made on the private part and the ashes is rubbed once	1
		<i>Abrus precatorius</i> (Fabaceae)	Chanchan-golo	Leaf	Leaf, uda seed and alligator pepper is extracted with dry gin	One shot thrice daily	2
				Root	Root is extracted with dry gin	One shot twice daily	
		<i>Grewia spp</i> (Tiliaceae)	Ugbor	Root	Root is extracted with dry gin	One shot twice daily	1
		<i>Milicia excelsa</i> (Moraceae)	Orji	Root	Root and uziza seed is extracted with dry gin	One shot twice daily	1
		<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Leaf and root	Leaf and root is extracted with dry gin	One shot thrice daily	1
		<i>Alchornea cordifolia</i> (Euphorbiaceae)	Ubeh	root	Root and is cooked	One tumbler twice daily	1
		<i>Icacina trichantha</i> (Icacinaceae)	Eru-ukwa	Leaf	Leaf is pound and extracted with dry gin	One shot anytime needed	1
		<i>Pycnanthus angolensis</i> (Myristicaceae)	Uturuh	Root	Root is extracted with dry gin	To be drunk anytime needed	2
<i>Crinum jagus</i> (Amaryllidaceae)	Onions ali	Root	Root is extracted with dry gin	To be drunk when needed	1		
<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Root	Root is extracted with dry gin	One shot when needed	1		

9	Healthy foetus	<i>Musa paradisiaca</i> (Musaceae)	Plantain	Corm	The stump is allowed to rotten, the water is then extracted from the rotted stump and diluted with water	One teacup once daily	3
				Stem	Stalk is cut into smaller pieces and allowed to ferment for 24 hours	One cup twice daily	
		<i>Sida acuta</i> (Malvaceae)	Orgotolin	Leaf	Leaf is cooked with yam	Eaten once daily. For a 5 month old pregnancy	2
		<i>Centrosema pubescens</i> (Leguminosae)	Okasi-nwa-ewo	Leaf	Leaf is pound and extracted. Salt is added to the decoction	One cup twice daily	1
		<i>Ipomoea involucre</i> (Convolvulaceae)	Ogba-loyibo	Leaf	Leaf is pound and extracted with water. Salt is added to the decoction	One cup twice in 3 rd to 5 th month	1
		<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Leaf	Root is pound and extracted with water	One cup twice daily	2
10	Syphilis	<i>Stachytarpheta cayennensis</i> (Verbenaceae)	Opusi-udela	Leaf	Leaf is cooked	One tumbler twice daily	1
		<i>Costus afer</i> (Costaceae)	Oputo	Roots	Root is cooked with dry pepper	One cup twice or thrice daily	1
11	Abdominal pain	<i>Alchornea laxiflora</i> (Euphorbiaceae)	Ukurobe	Leaf	Leaf is cooked with Awolowo leaf	One cup thrice daily	1
		<i>Centrosema pubescens</i> (Fabaceae)	Ukazi-nwa-ewoh	Leaf	Leaf is pound and extracted with water	One cup thrice daily	1
12	Watery sperm	<i>Sclerocarpus africanus</i> (Asteraceae)	Osoali	Leaf	Leaf is pound, dried and extracted with milk	One cup once daily	2
		<i>Vernonia amygdalina</i> (Asteraceae)	Ulubu	Leaf	Leaf is squeezed and extracted with water	Half tumbler twice daily	1
13	Hernia	<i>Citrus sineensis</i> (Rutaceae)	Oboh	Root	Leaf is pound with native chalk and extracted with dry gin	One shot twice daily	1
		<i>Combretum micranthum</i> (Combretaceae)	Abiogu	Stem	Stem is extracted with dry gin	One shot thrice daily	1
		<i>Alchornea laxiflora</i> (Euphorbiaceae)	Ukrobi	Root	Root is extracted with dry gin	One shot twice daily for a month	2
		<i>Newboldia laevis</i> (Bignoniaceae)	Ukesi	Leaf	Leaf is pound and mixed with honey	One tablespoon thrice daily	1
		<i>Carica papaya</i> (Caricaceae)	Paw-paw	Leaf	Root is extracted with dry gin	One shot twice daily for a month	1

		<i>Bryophyllum pinnatum</i> (Crassulaceae)	Ndeta-eya-mini	Root	Root is extracted with dry gin	One shot twice daily for 2 months	1
		<i>Rauwolfia vomitoria</i> (Apocynaceae)	Akita	Root	Root is soaked in water for 24 hours	One tumbler every morning before eating	1
14	Low sperm count	<i>Costus afer</i> (Costaceae)	Oputo	Root	Root and lemon grass is extracted with palm wine	Half tumbler twice daily	2
					Root is ground to powder and used to drink tea or pap	Once every morning	
		<i>Pentaclethra macrophylla</i> (Fabaceae)	Uba-kiri	Root	Root is ground to powder and mixed in pap	One bowl in the morning thrice weekly	1
		<i>Sida acuta</i> (Malvaceae)	Orgotolin (draw-draw leaf)	Root	Root and ginger is ground to powder form. Powder is mixed with <i>Sorghum bicolor</i> drink (Kunu)	One cup twice in a week	1
15	Fibroid	<i>Alchornea laxiflora</i> (Euphorbiaceae)	Ngrobi	Leaf	Leaf is cooked	One cup thrice daily	7
					Leaf and yam is cooked as pepper soup	Eaten twice daily for 3 months	
		<i>Nephrolptis bisserata</i> (Dryopteridaceae)	Ebu-he	Leaf	Leaf is cooked with yam or unripe plantain as a pottage	Eaten every morning	1
16	Womb Cleansing after miscarriage	<i>Palisota hirsuta</i> (Commelinaceae)	Npuruku-ezi	Leaf	Leaf, Awolowo leaf and Orji leaf are cooked	One cup is drunk twice daily. Bath with thrice daily	2
		<i>Piper guineensis</i> (Piperaceae)	Uziza	Seed	Seed is pound and extracted with dry gin	One shot every morning before a meal	1
		<i>Acanthus montanus</i> (Acanthaceae)	Agamebu	Leaf	Leaf and wonderful kola is extracted with dry gin	One shot every morning	1
		<i>Cymbopogon citratus</i> (Poaceae)	Ehia tea	Leaf	Leaf and wonderful kola is extracted with dry gin	One shot thrice daily	1
		<i>Ocimum gratissimum</i> (Lamiaceae)	Ureh	Leaf	Leaf is cooked	One cup twice daily. Bath with the decoction twice daily	1
		<i>Newboldia leavis</i> (Bignoniaceae)	Ukesi	Root	Root and uda seed is extracted with dry gin	One shot twice daily	1

		<i>Dracaena mannii</i> (Asparagaceae)	Ikirimodu	Root and leave	Root and leaf is burnt. Leaf and root with native chalk is pound and extracted with water	The burnt leaf and root is rubbed on the stomach. One cup of the decoction is drank twice daily	1
17	Lack of breast milk after delivery	<i>Carica papaya</i> (Caricaceae)	Paw-paw	Unripe fruit	Fruit is extracted with palm wine	Fruit is eaten once while the palm-wine is sprinkled on the breast	1
18	Pile	<i>Culcasia scandens</i> (Araceae)	Oso-abanali	leaf	Leaf is burnt and mixed with palm kernel oil	The mixture is rubbed thrice daily	1
		<i>Aframomum melegueta</i> (Zingiberaceae)	Oso-orji (alligator pepper)	Seed	Seed is pound. It is mixed with palm oil and extract it with warm water	One cup twice daily for 3 days	1
19	Heal the womb after delivery	<i>Aframomum melegueta</i> (Zingiberaceae)	Alligator pepper	Seed	Seed is extracted with dry gin	One shot twice daily	2
		<i>Xylopia aethiopica</i> (Annonaceae)	Akoluda	Seed	Seed is cooked with yam as pepper soup	Eaten twice daily	4
		<i>Piper guineense</i> (Piperaceae)	Uziza	Leaf	Leaf is cooked with yam as pepper soup	Eaten twice daily	3
				Seed	Seed is cooked with uda seed and yam into a pepper soup	Eaten once daily	
		<i>Buchholzia coriacea</i> (Capparaceae)	Wonderful kola	Nut	Wonderful kola and uda seed is extracted with dry gin	One shot once daily	1
		<i>Xylopia aethiopica</i> (Annonaceae)	Uda	Seed	Seed is cooked into pepper soup with uziza seed, dry fish, pepper and salt	Eaten as a meal once daily	2
		<i>Tridax procumbens</i>	Eyasi	Leaf	Leaf, wonderful kola and uda seed is extracted with dry gin	One shot twice daily	1
20	Discomfort of the baby in the womb	<i>Scoparia dulcis</i> (Schrophulaceae)	Eza-dibia	Leaf	Leaf is extracted with dry gin	One shot daily	1
21	Irregular menstrual period	<i>Olax subscopoides</i> (Olacaceae)	Eza-bor (native broom)	Roots	Root is extracted with dry gin	One shot twice daily	1
		<i>Alchornea cordifolia</i> (Euphorbiaceae)	Ubeh	Leaf	Leaf is pound and extracted with water	One cup thrice daily	1
22	Easy labour inducement	<i>Corchorous olitorius</i> (Malvaceae)	Ekwo-owe (ewedu)	Leaf	Leaf is squeezed and extracted with water	One cup once a month from the 6 th to 9 th month	2

		<i>Laportea ovalifolia</i> (Urticaceae)	Abahi (stingy nectar)	Leaf	Leaf is squeezed and extracted with water.	One tumbler once	1
23	Skin infections during pregnancy	<i>Jatropha gossypifolia</i> (Euphorbiaceae)	Wahiea	Leaf	Leaf, pepper, dry fish and salt is cooked	Eaten once daily	2
24	Rashes on the body during pregnancy	<i>Cissus quadrangularis</i> (Vitaceae)	Ogbasi-ovan	Stem	Stem is cooked with salt and pepper	One cup twice daily	1
		<i>Momordica charantia</i> (Cucurbitaceae)	Nwa-anasi	Leaf	Leaf is squeezed and extracted with water	Bath with native soap twice daily for 3 days	1
25	Excess fluid in the womb (9 month pregnancy)	<i>Physalis angularis</i> (Solanaceae)	Ohuru-gbohu	Leaf	Leaf is cooked. The water is used to bake "garri" (Cassava flakes)	The "garri" is used to eat any soup	2
26	When the baby in the womb is not kicking	<i>Hibiscus acetosella</i> (Malvaceae)	Wambo	Leaf	Leaf is cooked with pepper, salt and yam	Eat once in 3 months	1

Table 3. Taxonomic Families and Growth Forms of the Medicinal Plant Species in the study area.

S/No	Plant Family	Frequency	Plant Forms	S/No	Plant Family	Frequency	Plant Forms
1	Malvaceae	07	Shrub/herb	25	Crassulaceae	01	Herb
2	Fabaceae	06	Tree/Shrub	26	Curcubitaceae	01	Climber
3	Asteraceae	04	Shrub/Herb	27	Dryopteridaceae	01	Fern
4	Euphorbiaceae	04	Tree/Shrub	28	Icacinaceae	01	Herb
5	Poaceae	04	Tree/Herb	29	Loganiaceae	01	Tree
6	Solanaceae	03	Shrub/Herb	30	Melastomaceae	01	Creeper
7	Acanthaceae	02	Herb	31	Meliaceae	01	Tree
8	Araceae	02	Herb/Climber	32	Musaceae	01	Tree
9	Cleomaceae	02	Herb	33	Myristicaceae	01	Tree
10	Lamiaceae	02	Shrub/Herb	34	Myrtaceae	01	Tree

11	Moraceae	02	Tree	35	Olacaceae	01	Shrub
12	Amaryllidaceae	01	Herb	36	Phylantaceae	01	Herb
13	Anacardiaceae	01	Tree	37	Piperaceae	01	Climber
14	Annonaceae	01	Tree	38	Rubiaceae	01	Shrub
15	Apocynaceae	01	Shrub	39	Rutaceae	01	Tree
16	Asclepiadaceae	01	Climber	40	Sapotaceae	01	Tree
17	Asparagaceae	01	Tree	41	Schrophulaceae	01	Herb
18	Bignoniaceae	01	Tree	42	Smilacaceae	01	Climber
19	Capparaceae	01	Tree	43	Sterculiaceae	01	Tree
20	Caricaceae	01	Tree	44	Urticaceae	01	Herb
21	Combretaceae	01	Climber	45	Verbanaceae	01	Herb
22	Commelinaceae	01	Shrub	46	Vitaceae	01	Climber
23	Convolvulaceae	01	Climber	47	Zingiberaceae	01	Herb
24	Costaceae	01	Shrub				

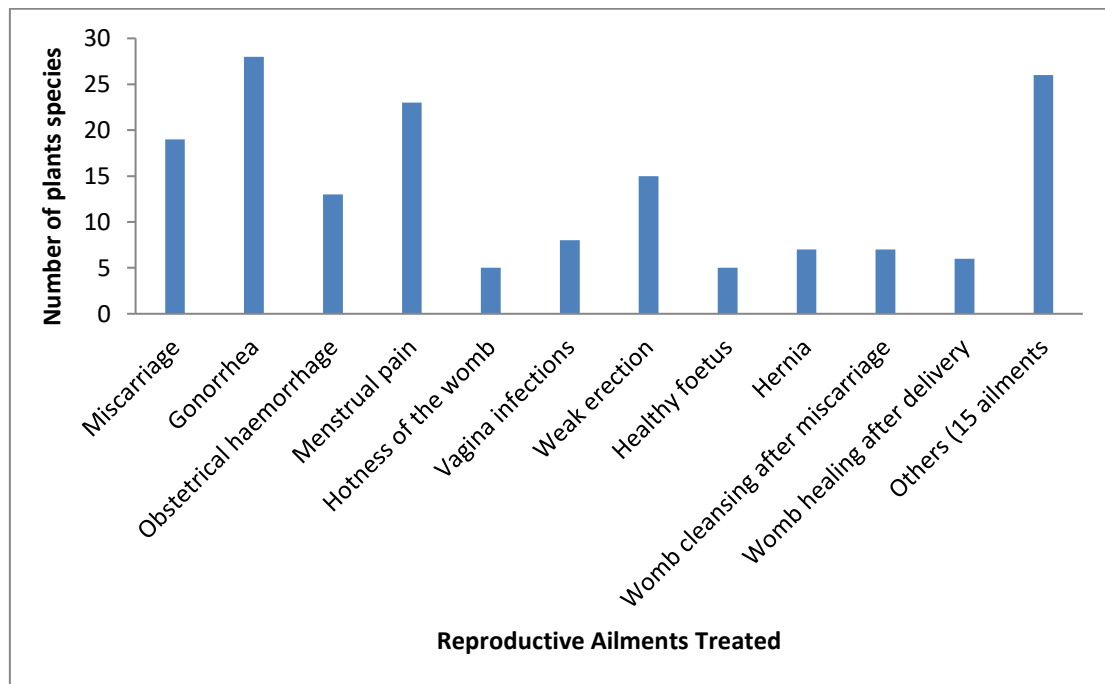


Figure 3. Number of plants used to treat different reproductive ailments by Ogba/Egbema/Ndoni ethnics in Rivers state, Nigeria

4. DISCUSSIONS

4. 1. Socio-economics of Informants

The medicinal use of plants in the management and treatment of diseases has been an age long practice worldwide. Many of these plants are used to treat broad spectrum of diseases and ailments in different cultures of the world. Accumulated knowledge of plants as medicine is passed from generation to generation. This study showed that males and females utilize herbal medicine in all the communities visited for the study, however, males are more into herbal medicine practice than females in the study area (Table 1).

This could be due to the fact that most men are general practitioners while most women are mainly interested in local paediatrics medicine, diseases associated with pregnancy and child delivery. This is in congruent with Togola *et al.*, [15] who asserted that men are more knowledgeable than women in medicinal plants and hence dominate the practice of traditional medicine in West Africa. Elderly people above 40 years were mainly involved in herbal practice (66.6%) in this study; this trend was also observed by Diame [16] who noted that only a few healers were below 40 years in neighbouring Ghana. Although, traditional medicine is known to be well used by Ogba/Egbema/Ndoni ethnics, several young people are not interested in the practice due to urbanization. Naranjo [17] argued that modernization contribute to disappearance of such precious knowledge. However, lack of enviable white collar jobs and unaffordability of modern health care facilities has motivated some young people below age 40 (43.4%) to get involved in the practice of herbal medicine.

Educational background of informants revealed most of them stopped at Primary (51.4%) or Secondary (33.3%) school levels (Table 1), which corroborates studies by Yineger and Yewhalaw [18]. Education tool is essential for proper documentation of recipes for herbal medicine standardization and could help in maintenance of good hygiene in drug preparation. Most of the people interviewed were farmers (56) who also possess the knowledge and use it to help in their community, while only 23 were herbalists or/and traditional birth attendants (TBAs). This suggests that ethno medicinal knowledge of plants is not limited to active herbal medicine practitioners, other indigenous people who use or interact with plants constantly can be approached to obtain useful information on medicinal potentials of plants growing around them.

4. 2. Preparation and Administration of Herbal Medicines for Sexual Diseases

More than one plant species are usually employed in the preparation of remedies for sexual ailments (Table 2). Mixture of different plant species does not necessary indicate that all the plants mixed have active constituents against the ailments, however, some are added to improve taste or for preservation purposes such as *Xylopi aethiopica*, *Aframomum melegueta* and *Piper guineense*. Igoli *et al.*, [19] and Bussman and Sharon, [20] attributed possible additive and synergistic effects of plants in herbal drug mixtures. Substantial numbers of herbal remedies in this study were also prepared from single plant species; this is congenial with other studies in Bolivia and Mali [15,21].

Generally the preparation of remedies was in the form of infusions, decoctions and powder from different plant parts mainly with water or dry gin. Some applications are often prepared using mixture of plants and other ingredients such as, calabash chalk (Bentonite clay) and salt (Sodium chloride).

Administration was mainly by oral ingestion, topical or incision with unstandardized doses which varies from one practitioner to another. In some cases dried and fresh plant materials are used as recipes.

In the management of miscarriage, 19 plant species were cited in the study of which *Chromolena odorata* (14) and *Tridax procumbens* (9) were the most frequently used species. *Chromolena odorata* had been documented for the treatment of miscarriage in Nigeria [12]. This work indicated about 45 species used for sexually transmitted infections (STIs) such as gonorrhoea and syphilis. *Rauvolfia vomitoria* and *Chromolena odorata* were the two most frequently used species for STIs in the study; this is similar to the report of [12]. Ampofo [22] observed that STIs are the major causes of male infertility in developing countries such as Ghana and Nigeria, hence use of local plant materials by rural people for STIs management in the area. Methanolic extracts of *R. vomitoria* roots and *A. melegueta* have been demonstrated to show activity against *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella spp*, *Salmonella*, *Shigella*, *Pseudomonas aeruginosa*, *C. albicans* and *A. niger* [23,24] while *C. odorata* showed high degree of inhibition against human bacterial skin infections such as *Staphylococcus aureus* TISTR 1466 and *Streptococcus pyogenes* ATCC 19615 [25].

These reports justified choice of these plant species in the treatment of STIs locally and indicated their potentials for development of important future drugs. A total of 16 plant species such as *Sida acuta* and *Musa paradisiaca* were frequently used for prepartum depression and to facilitate delivery. Dokosi [26] and Fasola [14] also recorded the use of whole plant of *Sida acuta* for prenatal care in Ghana and Nigeria respectively. For postpartum Ten (10) species were cited and out of which, seven (7) species were used for womb cleansing after delivery; the other three (3) species were used for lactation failure (enhance production of breast milk). Most of the species recorded for these purposes had been reported by earlier workers in Nigeria. For instance, *Xylopi aehiopia* had been reported as being used to correct lactation failure [12]. The fruit pod of *Xylopi aehiopica* has also been used to cleanse the womb after delivery in south eastern Nigeria [27].

Menstrual disorders occur in most women who are not yet mothers, that is, those who have not started bearing children. The menace has received lots of attention from most herbal medicine practitioners, just as gonorrhoea, several herbal remedies such as decoctions and powders are sold in the market locally for its treatment. *Jatropha curcas* and *Carica papaya* surveyed in this work are some of the most frequently used species for menstrual disorders locally in Nigeria, these species have been reported for managing menstrual disorder in Lagos, Oyo and Abia states [27-29]. Weak erection is one of the commonest conditions with much attention in herbal practitioner's parlance, mostly marketed as bitters and usually advertised on electronic and print media in southern Nigeria. Important plant species used for weak erection in our findings includes *Urena lobata*, *Newbouldia laevis*, *Abrus precatorius* *Pycnanthus angolensis*, *Azadirachta indica*, *Musa paradisiaca* and *Acanthus montanus*.

Hernia is one of the abnormal protrusions of a part of the organs affecting male adults. Twelve (12) plant species were recorded for hernia in the study including *Alchornea laxiflora* and *Rauvolfia vomitoria* which were also reported for the same purpose in Ghana [16].

4. 3. Plant Parts Used in Medicine

A wide variety of plant parts are used for herbal medicines and reports of the dominant parts varied with cultural backgrounds. In this study, all the plant parts are employed in herbal remedies such as leaves, roots, stem barks, fruit and seeds. Leaves constitute the most used

(52.28 %), roots (37.54 %) and bark (3.86%) among the Ogba/Egbema/Ndoni ethnics studied (Fig. 2). Some studies have found leaves as the most frequently plant parts used in remedy preparations [30,31].

Other workers reported that usually the stem bark is preferred for medicinal use in the Caatinga (Brazil) due to its continuous temporal availability [32]. However, Poffenberger *et al.*, [33] observed that the use of bark and roots could threaten the existence of individual plants as compared to leaves. Also, Togola *et al.*, [15] noted that the need for the use of stem bark will increase when leaves and fruits are out of season. In another study of plants used for wound healing in Dogonland (Mali), Inngjerdigen *et al.*, [34] found that the roots and leaves were the most frequently used plant parts. Nonetheless, the practice of exploiting perennial plant parts, such as roots and stem barks can result in a population decline of important medicinal plant species [35].

4. 4. Taxonomic Distribution and Growth Forms of the Medicinal Plant Species

The diversity of medicinal plant species used by Ogba/Egbema/Ndoni ethnics to treat reproductive ailments comprised of 119 species distributed into 47 families and 71 genera used in the management of 26 ailments. Most cited plant families includes; Malvaceae (7 species), Fabaceae (6 species), Euphorbiaceae (4 species) Poaceae (4 species) and Asteraceae (4 species). Similar works showed that Euphorbiaceae (northern Maputaland, South Africa), Euphorbiaceae and Asteraceae (Cameroun) ranked highest for male and female reproductive problems [4, 36]. This is in contrast to Malvaceae and Fabaceae recorded in this work among the Ogba/Egbema/Ndoni ethnics in Nigeria. Also, similar studies have reported 156 plants used for gynecological conditions in South Africa, 42 plant species in Trinidad and Tobago for reproductive problems, 17 plants used for treating infertility, gynecological and obstetric problems by the Esan people of Nigeria [9,37,38].

5. CONCLUSIONS

Medicinal plants play a vital role in the maintenance of human health throughout the world and notably in the developing sub-Saharan West African countries. Traditional medicine has remained the most affordable and easily accessible source of treatment in the primary healthcare system of the rural people in Nigeria. The study has confirmed the fact that herbal medicine presents an alternative source of healthcare for most rural dwellers. A rich heritage of indigenous medicinal plant use and knowledge was represented with a sample of 119 medicinal plants (trees, shrubs, climbers and herbs) recorded in the 10 communities of Ogba/Egbema/Ndoni ethnics for the treatment of a range of sexual and reproductive conditions. It could be deduced from this study that Malvaceae, Fabaceae, Euphorbiaceae and Asteraceae were the most important ethno-botanic families used in the treatment of sexual ailments in the study area. Results from this study indicate that rural people in Rivers state of Nigeria still patronize traditional herbal medicine solely or alongside modern medicine for their health care needs. Cultivation of wild medicinal plants in mixed cultures and agro-forestry systems need be encouraged among the rural farming population for conservation and sustainable supply. Ethno-pharmacological studies on the reported surveyed medicinal plant species in this study could lead to development of useful drugs.

References

- [1] Singh A.P, *Ethnobotanical Leaflets* 11 (2007) 206-207.
- [2] Wasongo, V.O, Kambewa, D and Bekalo, I, In W.O. Ochola, P.C. Sanginga, I. Bekalo (Eds.), *Managing Natural Resources for Development in Africa. A Resource book.* Nairobi, Kenya: University of Nairobi Press, (2011) 165-210.
- [3] World Health Organization (2013) pp-64. Accessed January, 2018 from: http://apps.who.int/iris/bitstream/10665/112922/1/9789241507400_eng.pdf
- [4] de Wet, H and Ngubane S.C, *South African Journal of Botany* 94 (2014) 129-139
- [5] Hegde H.V, Hedge G.R and Kholkute S.D, *Compliment Ther Clin Pract.* 13 (2007) 38-45.
- [6] Hossan M.S, Hanif A, Agarwala B, Sarwar M.S, Karim M, Rahman M.T-U, Jahan R and Rahmatullah M, *Ethnobotanical Research and Application* 8 (2010) 61-74.
- [7] World Health Organisation, who.int/medicinedoes/en/jh2943e/432/html, (2012). Accessed Jan. 2018
- [8] Diallo D and Paulsen B.S, In: Svarstad H and Dhillion S (eds.): *Responding to Bioprospecting: From Biodiversity in the South to Medicine in the North.* Spartacus Forlag, As, Oslo, Norway, (2000) 133-144.
- [9] Okoli R.I, Aigbe, O, Ohaju-Obodo J.O. and Mensah J.K, *Pakistan Journal of Nutrition* 6 (5) (2007) 490-496.
- [10] Ajibesin K.K, Bala D.N and Umoh U.F, *Int J Green Pharm* 5 (2011) 81-91
- [11] Oladele A.T, G.O Alade, and O.R Omobuwajo, *Agriculture and Biology Journal of North America*, 2(3) (2011) 476-487
- [12] Ogbe F.M.D., Eruogun O.L. and Uwagboe M, *Scientific Research and Essay*, 4(3) (2009) 120-130.
- [13] Borokini T.I, Ighere D.A, Clement M, Ajiboye T.O and Alowonle A.A, *Journal of Medicinal Plants Studies*, 4(5) (2013) 17-29.
- [14] Fasola T.R, *Journal of Biology, Agriculture and Health-Care* 5(4) (2015) 7-11.
- [15] Togola, A. T. Diallo, D., S. Barsett, H. and Paulsen, B. S, *Ethnobiology and Ethnomedicine*, 1 (2005) 7-10.
- [16] Diame, G. L. A, The Division of Ecological Sciences, UNESCO (MAB) Young Scientist Research Award Scheme Paris Cedex 15, France, UNESCO, Accra office, (2010), p. 150
- [17] Naranjo, P, In: *Ethnobotany: evolution of a discipline.* (eds. R. E. Schultes and von Reis S.). Chapman and Hall, London, U.K. (1995) 23-39.
- [18] Yineger, H. and Yewhalaw, D, *Ethnobiology and Ethnomedicine*, 3 (2007) 24-33.

- [19] Igoli, J. O., Tor-Anyiin, T. A., Usman, S. S., Oluma, H. O. A., and Igoli, N. P, In: Recent Progress in Medicinal Plants. (eds. Singh, V. K., Govil, J. N., Hashmi, S, and Singh, G.). Sci. Tech. Pub, USA. (2002) 327-338.
- [20] Bussman, R. W and Sharon, D, *Ethnobiology and Ethnomedicine*, 2 (2006) 47.
- [21] Macía, M. J, García, E, and Vidaurre, P. J, *Ethnopharmacology*, 97 (2005) 337-350.
- [22] Ampofo, D. A, The J. B. Danquah Memorial Lectures-Twenty-sixth series, March, 1993. In: Ghana Academy of Arts and Sciences (1994) 1-81.
- [23] Sonibare, M.A, Lawal T.O and Ayodeji O.O, *International Journal of Pharmacology*, 7 (2011) 492-497.
- [24] Ojo O.O, Ajayi S. S and Owolabi L. O, *International Research Journal of Biochemistry and Bioinformatics*, 2(6) (2012) 127-134
- [25] Hanphanphoom S and S. Krajangsang, *Modern Applied Science* 10(2) (2016) 159-171
- [26] Dokosi, O. B, Herbs of Ghana. Ghana Universities Press, Accra. (1998), p. 746
- [27] Chima, U.D, Oladele A.T and Okorie M.C.F, *Journal of Forest Science* 29(4) (2013) 257-274
- [28] Olowokudejo J. D, Kadiri A. B and Travih V.A, *Ethnobotanical Leaflets* 12 (2008) 851-65
- [29] Oladele A.T and Aderounmu A.F, *Journal for Applied Research*, 5(1) (2013) 73-93
- [30] Giday, M., Asfaw, Z., Elmqvist, T and Woldu, Z, *Ethnopharmacology*, 85 (2003) 43-52.
- [31] Kamatenesi-Mugisham M. and Oryem-Origa, H, *Ethnopharmacology*, 109 (2007) 1-9.
- [32] Silva A. C. O and Albuquerque U. P., *Acta Botanica Brasilica*, 19 (2005) 17-26.
- [33] Poffenberger M, McGean B, Khare S. Campbell J, *Nature*, 163 (1992) 688.
- [34] Inngjerdigen, K., Nergard, C. S., Diallo, D., Mounkoro, P. P. and Paulsen, B. S, *Ethnopharmacology*, 92 (2004) 233-244.
- [35] Dhillion, S. S. and Amundsen, C, Responding to Bioprospecting: From Biodiversity in the South to Medicines in the North. (eds. Savrstad, H. and Dhillion, S. S.). Spartacus Forlag, As, Oslo, Norway, (2000), p. 144
- [36] Tsobou, R, Mapongmetsem P.M. and van Damme P, *Economic Botany*, 70(2) (2016) 145–159
- [37] Steenkamp V., *J. Ethnopharmacol.* 86 (2003) 97-108.
- [38] Lans C, *J. Ethnobiol. Ethnomed.* 3 (2007) 13.