International Journal of Medicinal Plants and Natural Products (IJMPNP)
Volume 3, Issue 2, 2017, PP 6-18
ISSN No. (Online) 2454-7999
DOI: http://dx.doi.org/10.20431/2454-7999.0302002
www.arcjournals.org

Ethno-Gynaecological Knowledge and Preliminary Phytochemical Screenings of Medicinal Plants used in Lagos State, Nigeria

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Abstract: *Gynaecological disorders are various diseased conditions negatively affecting female reproductive organs. This study was conducted to establish a regional profile of the indigenous knowledge on the treatment of various gynaecological disorders in Lagos State, Nigeria. Oral and semi-structured interviews were used to obtain information from 100 local informants in five local government areas of Lagos State, Nigeria. Qualitative phytochemical screenings of the medicinal plants were done using standard laboratory procedures. Fifty (50) plant species belonging to 35 families were identified for the treatment of different gynaecological disorders in the study area. Ethnobotanical uses of 16 plant species for amenorrhea, 9 species for aphrodisiac, 7 species for vaginal infections and 6 plant species for sexually transmitted diseases were discovered in the study area. Leaves were the most commonly used plant part (29.03 %) followed by the bark (22.58 %) while the least commonly used plant part was the bulb (1.61 %). Decoction (48.08 %) was commonly used mode of preparations, followed by powdered form (23.08 %) while taking the plant raw (1.29 %) was the least commonly used method. Phenols and flavonoids were present in all the plants while steroids were present in all the plants except six plants and phlobatannins were present only in ten (10) plant species. This study showed that Lagos State is rich in plant species that contain significant bioactive compounds useful in the treatment of various gynaecological disorders in Lagos State, Nigeria.*

Keywords: *Gynaecological disorders, Lagos State, Ethnobotanical survey, Medicinal plants, Phyto-chemicals*

1. INTRODUCTION

The prevalence of gynaecological disorders worldwide has given rise to increased female infertility, morbidity and mortality (Ikechebelu, 2005). Gynaecological disorders are various diseases and conditions negatively affecting female reproductive organs. They can be minor and easily treated or devastating. They negatively impact woman's quality of life, fertility and longevity. Uterine fibroids, annovulation, amenorrhea, dysmenorrhea, endometriosis, hyperprolactinemia, pelvic inflammatory disease, dyspareunia, lactation problems, delivery problems, miscarriages, sexually transmitted diseases, tubal damage and gynaecological cancers are some of the common gynaecological disorders affecting women in Nigeria and the world at large. These can be as a result of several factors which may be physical, pathological and pharmacological. Pandey and Bhattacharya (2010) stated that physical factors such as age, stress, poor diet, lack of exercise, overweight, underweight and obesity can lead to abnormal functioning of the female reproductive system. Pathological causes are diseases of hypothalamus, pituitary, thyroid, adrenal glands, ovarian disorders, congenital disorders of genital organs and chromosomal abnormalities (Freeman *et al*., 2000). Certain medications such as reserpine, antipsychotic drugs, risperidone, phenothiazines, metoclopramide, oral contraceptive pills etc. have been indicted to be responsible for some gynaecological disorders (Melmed *et al*., 2011).

Gynaecological disorders have been implicated in the aetiology of female infertility currently affecting 30 % or more women of reproductive age (Rustein and Shah, 2004). Eggleston and Victor (2012) reported that, global total fertility in 1960s was 6.1 million, but it has now fallen to 4.2 million. According to Sule *et al*. (2008), 30 % of women in Nigeria have proven difficulties in achieving pregnancy after two years of contraceptive free intercourse. Hyperprolactinemia (Azima and Samina,

2002), tubal damage (Akande *et al*., 2003), reproductive tract infections (Ali *et al*., 2007), annovulation (Nduche *et al*., 2015), sexually transmitted diseases (Inyang-Etoh *et al.*, 2009), leucorrhea (LIewellyn-Jones, 1998), menstrual disorders (Dag and Dilbaz, 2015) are some of the factors reported to account for a significant proportion of cases of female infertility.

Gynaeacological disorders have also been associated with gynaeacological morbidity such as foul-smelling vaginal discharge, uterovaginal prolapse post-coital bleeding, heavy menstrual bleeding and tiredness. Symptoms of gynaeacological morbidity were found to have negative impact on health related quality of woman's life (Black and Fraser, 2012). Heavy menstrual bleeding has been linked to anaemia; maternal anaemia is associated with low fetal growth and increase in maternal mortality (Kalaivani, 2009). Gynaeacological cancers are associated with high rate of fatality in women. Endometrial cancer has been reported to be the most common cancer of the female reproductive organs (Jema *et al*., 2011) while ovarian cancer has been reported to be the commonest cause of death among all gynecological cancers (Hennessy *et al*., 2009).

The use of conventional medicines in the treatment and management of different gynaeacological disorders has been awesome but the drugs have been associated with gastrointestinal, cardiovascular and neurological side effects (van Rijswijk and Vermorken, 2000). Calao *et al*. (2006) reported that the use of dopamine agonist drugs such as bromocriptine, carbegoline and pergolide to treat hyperprolactinemia were linked to the development of certain types of hyperplasia in women.

Medicinal plants have been reported to be effective in the treatment of different gynaeacological disorders; *Angelica sinensis* (Schellenberg, 2001), *Vitex agnus-castus* (Wuttke *et al*., 2003), *Cimicifuga racemosa* (Schellenberg, 2001), *Eletherococcus senticosis* (Mayo, 1998), *Coriandrum sativum* (Sadeghi and Mahmood, 2014), *Foeniculum vulgare* (Sadrefozalayi and Farokhi, 2014) and *Cuminum cyminum* (Tavasoli *et al*., 2002) were some of the plants reported. This study therefore, aimed at identifying, documenting and preliminary phytochemical screening of the indigenous medicinal plants used for the treatment of various gynaeacological disorders in Lagos State, Nigeria. This is to establish a regional profile of the indigenous knowledge on the treatment of various gynaeacological problems in Lagos State, Nigeria.

2. STUDY AREA

The study was carried out in Agege, Badagry, Ojo, Mushin and Somolu Local Government Areas of Lagos State, Southwestern Nigeria (Figure 1). Lagos State is located on the southwestern geopolitical zone of Nigeria and is the most economically important and the financial centre of the country. It is located on longitude 6^{o} 35'N and latitude 3^{o} 45'E with an elevation of 41 m (135 ft) above sea level. It occupies a total area is 3,577 km^2 with an approximate population of 16 million (Census 2006), 22 % of the total area are lagoons and creeks.

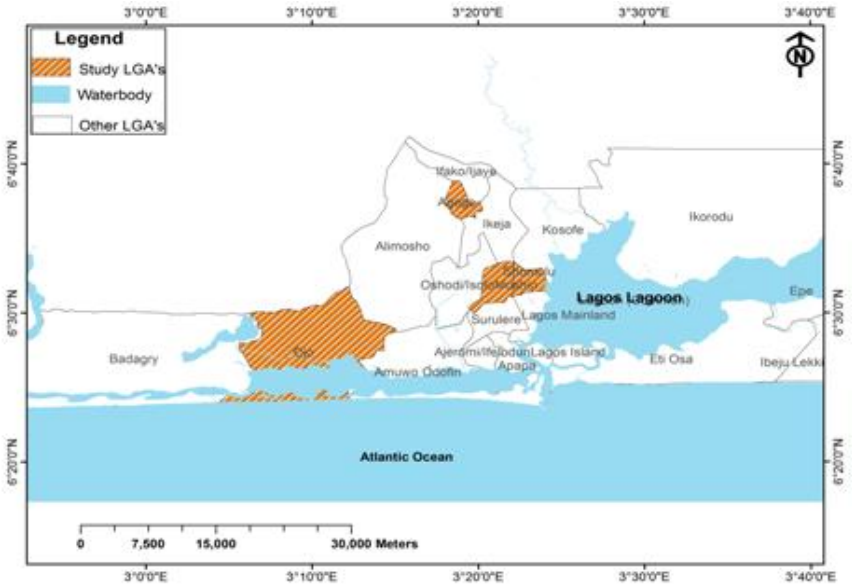

Figure1. *Map of Lagos State, Nigeria showing the study area*

3. MATERIALS AND METHODS

3.1. Data Collection

Collection of data was done between September 2014 and June 2015. Ethno medicinal information was obtained through oral and semi-structured interviews. The interviews were conducted randomly with a total of 100 local respondents including herb sellers, herbalists, elderly people and others with the knowledge of herbal medicine (Table 1). The consents of all the respondents were sought before the interviews. The interviews were held in our local language (Yoruba) hence, there was no need for interpreter and this allowed accurate data recordings. The information collected included different gynaecological disorders commonly affecting women in the study area, plants or plant parts used for the treatment, the local names and modes of preparation and administration of the medicinal plants.

Table1. *Distribution of local informants in accordance with their age groups*

Age Groups	Categories of Informants				
	Herb sellers	Herbalists	Elderly people	Others	Total
31-40	5	-	-	1	6
41-50	21	7	-	3	31
51-60	10	2	3	4	19
61-70	10	2	4	6	22
71 and above	5	5	10	2	22
Total	51	16	17	16	100

3.2. Collection and Identification of Medicinal Plants

Fresh plant materials were collected from the study area. They were identified by Dr. OJ Sharaibi, a plant taxonomist and the voucher specimens were deposited in Lagos University Herbarium for reference.

3.3. Sample Preparation and Extraction

The fresh plant materials were rinsed, air dried and pulverized before extraction. One hundred gram each of the powdered material was soaked in 1000 mL of distilled water. The extracts were filtered through Whatman no.1 paper and the filtrate was freeze-dried for 48 h using a freeze dryer (Vir Tis benchtop K, Vir Tis Co., Gardiner, NY).

3.4. Qualitative Phytochemical Screenings

The aqueous extract of all the medicinal plants used in folklores for the treatment of various gynaecological disorders in Lagos State, Nigeria were screened for the presence of secondary metabolites using standard laboratory procedures (Trease and Evans, 2002; Harborne, 2005).

3.5. Data Analysis

Simple calculations and quantification of the ethno-botanical data was done by using the relative frequency citation (RFC) technique. This was obtained by dividing the frequency of citation of a plant species (FC) by the total number of species reported.

$$RFC=FC/N$$

The percentage relative frequency ratio was obtained using the formula:

$$\% RFC = FC/N \times 100$$

Where FC is the number of times a particular species is mentioned, and N is the number of all respondents.

4. RESULTS AND DISCUSSION

4.1. Details of the Informants

Table 1 showed the profile of the local respondents interviewed for the medicinal plants used for the treatment of gynaecological disorders in Lagos State, Nigeria.

One hundred local informants were interviewed during this study; 51 herb sellers, 17 elderly people, 16 herbalists and 16 others with knowledge of herbal medicine. This showed the availability of indigenous knowledge of herbal medicine in Lagos State that is majorly a metropolitan state. Majority of the informants were between 40-50 years of age (31 %). This study revealed that parents are the major custodians of the herbal knowledge being transferred to the younger generation and little or none is learnt from Schools. The respondents especially the herb sellers and the herbalists claimed that most women in the study area with gynaeacological disorders preferred traditional medicine to orthodox medicine due to the high rate of consultation. WHO (2002) stated that 80 % of people in developing countries rely on herbal medicine for their primary health care. The preference for herbal medicine in the study area can be attributed to poverty, accessibility to medicinal herbs and general belief that medicinal herbs are less toxic. The positive attitude of the informants to divulge information on the local herbs used for various gynaeacological disorders in the study area was an added advantage in achieving the aim of this study.

4.2. Medicinal Plants used for Gynaeacological Disorders

Fifty plant species belonging to 35 families were identified for the treatment of various gynaeacological disorders in five (5) Local Government Areas of Lagos State, Nigeria (Table 2). The distribution of the medicinal plants used for gynaeacological disorders within the families as shown in Table 3 revealed that Fabaceae had the highest number of plant species (10 %) followed by Euphorbiaceae (8 %). Annonaceae and Poaceae had three species each (6 %) this was followed by Anarcadiaceae, Bignoniaceae and Vitaceae with two species each (4 %). The remaining families had one species each. Most of these plants were edible while some were used mainly for medicinal purposes. Sixteen (16) out of the fifty (50) medicinal plants identified were used for the treatment of amenorrhea in the study area. This may be an indication that, the most common gynaeacological disorder affecting women in the study area was amenorrhea. Amenorrhea can be the resultant effects of other gynaeacological disorders such as hyperprolactinemia, hormonal imbalance, ovarian cysts, endometriosis and pelvic inflammatory disease (Fourman and Fazeli, 2015). Nine (9) plant species were identified as aphrodisiac and libido enhancer while seven (7) plant species were identified for the treatment of sexually transmitted diseases. One plant each was identified for the treatment of tubal blockage, endometriosis and ovarian cysts. This may suggest that these disorders were not common in the study area or the informants do not know the herbal remedies for these disorders (Figure 2). Some of the plant species identified were used to treat more than one gynaeacological disorders; *Aloe vera* was used as an aphrodisiac and also to treat amenorrhea as well as vaginal infections. *Lawsomia inermis* was used for the treatment of gonorrhea, leucorrhea and menorrhagia. This may be due to the presence of several bioactive compounds in these plants that can exhibit significant therapeutic actions on various gynaeacological disorders. Some of the plants mentioned have been reported to be used in herbal medicine for the treatment of other disease conditions. *Mangifera indica* (Titanji *et al.,* 2008), *Morinda lucida* (Odugbemi *et al.,* 2007) and *Azadirachta indica* (Alzohairy, 2016) are used for the treatment of malaria. *Heliotropium indicum* is used to treat skin infections and wounds (Muthu *et al.,* 2006), *Ocimum sanctum* for arthritis, dysentery and diarrhea (Pattanayak *et al*., 2010) and *Zingiber officinale* for cold, flu and hypertension (Al-Nahain *et al*., 2014).

Earlier survey reported that *Acacia nilotica, Calotropis procera, Citrullus colocynthis, Kigellia Africana, Morinda lucida, Mucuna pruriens, Nymphaea lotus, Plumbago zeylanica, Spondias mombin, Xylopia aethiopca* and *Zingiber officinale* are used for the treatment of infertility in Ogun State, Nigeria (Soladoye *et al.,* 2014). Similarly, Nduche *et al*. (2015) mentioned *Mucuna pruriens, Uvaria chamae, Xylopia aethiopica, Newbouldia laevis, Kigellia Africana, Zingiber officinale, Chochorus olitorius, Citrullus colocynthis, Heliotropium inducm, Anthocleista djalonensis, Viscum album* and *Azadirachta indica* in an ethnobotanical survey for the treatment of fertility problems in Ebonyi state, Nigeria. *Nymphaea lotus, Uvaria chamae* and *Anthocleista djalonensis* have also been reported by Sharaibi *et al.* (2014) for the treatment of hyperprolactinemia in Southwestern, Nigeria. This confirms the ethno-gynaeacological uses of the plants mentioned by the respondents in the study area.

Table2. *Medicinal Plants used for the Treatment of Gynaecological Disorders in Lagos State, Nigeria*

Family	Botanical Name	Local Name	Voucher Number	Plant Part	Preparation	Therapeutic Uses
Amaryllidaceae	*Allium cepa* Linn.	Alubosa	LUH 6942	Bulb	Cold maceration	Pelvic inflammatory disease
Anarcadiaceae	*Spondias mombin* Linn.	Iyeye	LUH 1866	Leaf and fruit	Decoction and raw fruit.	To ease labour and childbirth
Anarcadiaceae	*Mangifera indica* Linn.	Mangoro	LUH 1469A	Leaf and bark	Decoction	Leucorrhea
Annonaceae	*Uvaria chamae* P. Beauv.	Eruju	LUH 3202	Root	Decoction	Amenorrhea, Hyperprolactin-emia
Annonaceae	*Polyalthia longifoila* (Sonn.) Thwaites	Ashoka	LUH 3562	Root and bark	Powder	Menstrual Disorders
Annonaceae	*Xylopia aethiopica* (Dunal) A. Rich.	Eeru	LUH 3863	Fruit	Decoction	To induce lactation after child birth
Apocynaceae	*Calotropis procera* Ait.	Bomubomu	LUH 3578	Leaf and stem	Decoction	To increase milk production after childbirth
Bignoniaceae	*Newbouldia laevis* Seem.	Akoko	LUH 3551	Leaf	Decoction	Menstrual disorders, infertility.
Bignoniaceae	*Kigellia Africana* (Lam). Benth.	Pandoro	LUH 6097	Leaf and bark	Powder	Breast pain, Aphrodisiac
Boraginaceae	*Heliotropium indicum* Linn.	Atapari-obuko	LUH 3006	Root	Powder	Menorrhagia
Cactaceae	*Opuntia dilenni* (Ker-Gawl.) Haw.	Oro agogo	LUH 7823	Fruit	Decoction	Leucorrhea
Curcubitaceae	*Colocynthis citrullus* (Linn) Schrad.	Baara	LUH 6579	Fruit	Tinctures	Uterine fibroids, Sexually transmitted diseases
Curcubitaceae	*Momordica charantia* Linn.	Ejirin-wewe	LUH 2736	Whole plant	Decoction	Infertility, Dysmenorrhea
Euphorbiaceae	*Euphorbia laterifolia* Schum &Thonn.	Enuopire	LUH 3288	Bark	Powder	Amenorrhea, Veneral diseases
Euphorbiaceae	*Jatropha curcas* Linn.	Botuje	LUH 3388	Leaf	Leaf juice	Vaginal infections
Euphorbiaceae	*Ricinus communis* Linn.	Ilara	LUH 4742	Leaf and seed	Tinctures	To induce and ease labour
Euphorbiaceae	*Tetracarpidium Conophorum* (Mull.Arg.) Hutch.& Dalziel	Awusa	LUH 5637	Fruit	Cooked fruit	Improves libido and fertility. It balances the female hormones
Fabaceae	*Acacia nilotica* Linn.	Booni	LUH 3146	Bark	Decoction	Aphrodisiac, Gonorrhea, Menstrual problems.
Fabaceae	*Baphia nitida* Lodd.	Iyerosun	LUH 3516	Leaf	Infusion	Amenorrhea Dsymenorrhea
Fabaceae	*Delonix regia*	Panseke	LUH	Leaf,	Decoction	Leucorrhea

	(Hook.) Raf.		6524	bark and seed		
Fabaceae	*Pterocarpus osun* Craib.	Osun	LUH 3216	Bark	Powder	Amenorrhea
Fabaceae	*Mucuna pruriens* Linn.	Werepe	LUH 4012	Seed	Powder	Aphrodisiac. It enhances fertility.
Hypoxidaceae	*Curculigo pilosa* (Schumach & Thonn.) Engl.	Epakun	LUH 4587	Fruit	Cold maceration	Uterine fibroids, urinary tract infections, gonorrhea.
Icacinaceae	*Rhaphiostylis beninensis* (Hook.f.) Planch.	Itapara	LUH 5437	Bark	Powder	Menorrhagia
Iridaceae	*Gladiolus dalenii* Van. Geel.	Baka	LUH 6045	Seed	Tinctures	Female sterility
Lamiaceae	*Ocimum sanctum Linn.*	Efinrin-jije	LUH 5078	Leaf	Leaf juice	Constipation and nausea .
Liliaceae	*Aloe vera Linn Burm.f*	Ahon-Erin	LUH 3096	Leaf	Leaf juice	Aphrodisiac, Amenorrhea, Infections.
Longaniaceae	*Anthocleista djalolensis* A. Chev.	Sapo	LUH 3564	Root	Powder	Hormonal Imbalance, Annovulation.
Loranthaceae	*Viscum album Linn.*	Afomo	LUH 2340	Whole plant	Infusion and powder	*Uterine Fibroids, Hormonal imbalance, Irregular Menstruation*
Lythraceae	*Lawsonia inermis* Linn.	Laali	LUH 3837	Root	Decoction	Gonorrhoea, leucorrhoea, menorrhagia.
Malvaceae	*Corchorus olitorus Linn.*	Ewedu	LUH 3767	Leaf	Leaf juice	*To ease labour and smooth delivery.*
Meliaceae	*Azadirachta indica A. Juss.*	Dongoyaro	LUH 5011	Leaf and bark	Decoction	*Dysmenorrhea*
Moraceae	*Treculia africana* Decne.	Afon	LUH 4869	Whole plant	Decoction	Tubal blockage, Miscarriage
Moringaceae	*Moringa oleifera* Lam.	Ewe-igbale	LUH 4893	Leaf	Infusion	Hormonal imbalance, infertility
Myristicaceae	*Staudtia stipitata* Warb.	Amuje	LUH 6043	Bark	Decoction	Amenorrhea Dyspareunia
Nymphaeaceae	*Nymphaea lotus Linn.*	Osibata	LUH 7236	Leaves	Decoction	*Hyperprolactinem-ia Amenorrhea, Annovulation*
Olacaceae	*Olax subscorpiodiea* Oliv.	Ifon	LUH 3144	Bark	Decoction	Pelvic inflammatory disease
Piperaceae	*Pepperomia pellucida (Linn). Kunth.*	Rinrin	LUH 7283	Whole plant	Infusion	*Irregular Menstruation, Dysmenorrhea*
Poaceae	*Sorghum bicolor*	Poporo	LUH	Whole	Decoction	Breast diseases,

	Linn.		3068	plant		Miscarriage, Amenorrhea
Poaceae	*Bambusa vulgaris* Linn.	Oparun	LUH 1394A	Leaves and young shoots	Decoction	Gonorrhea, Aphrodisiac
Poaceae	*Cynodon dactylon Linn.*	Kooko-igba	LUH 3045	Whole plant	Decoction	*Amenorrhea, Menopausal symptoms, Hot flashes*
Polygalaceae	*Securidaca longipedunculata* Fresen	Ipeta	LUH 3150	Root	Decoction	Aphrodisiac, Ovarian cyst
Plumbaginaceae	*Plumbago zeylanica Linn.*	Inabiri	LUH 3203	Bark	Powder	Hormonal imbalance, Hyperpolactine-mia
Rubiaceae	*Morinda lucida* Benth.	Oruwo	LUH 3819	Leaf and Bark	Leaf juice and bark decoction	Gonorrhea, Fever during childbirth
Solanaceae	*Withania somnifera* Dunal.	Koroporo	LUH 7543	Bark	Powder	Amenorrhea, Aphrodisiac
Sterculiaceae	*Cola acuminata* Schott & Engl.	Obi	LUH 6905	Fruit	Decoction	Endometriosis, Amenorrhea
Vitaceae	*Cissus populnea* Guill & Perr	Ajara	LUH 6449	Leaf and root	Decoction	Sore breast/Sexually transmitted infections
Vitaceae	*Cissus quadrangularis* Linn.	Ogbakiiki	LUH 6458	Tuber and stem	Decoction	*Dysmenorrhea, Urinary tract infections.*
Zingberaceae	*Zingiber officinale* Roscoe.	Atale	LUH 4396	Tuber	Decoction	Morning sickness, Nausea, Pelvic inflammatory Disease
Zygophyllaceae	*Tribulus terrestris*	Dagunro	LUH 4478	Whole plant	Powder	Aphrodisiac, Hormonal Imbalance

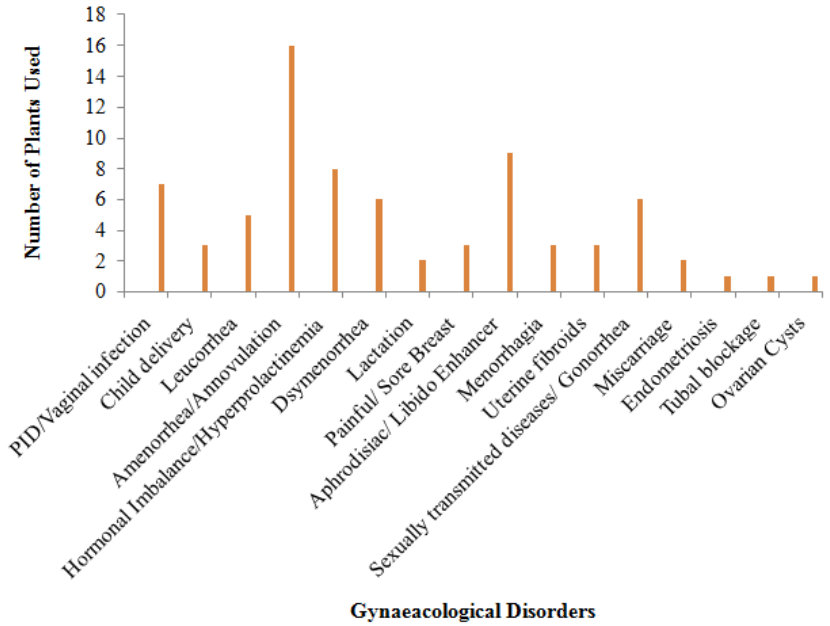

Figure2. *Plants diversity used for a specific gynaecological disorder in Lagos State, Nigeria*

Table3. *Distribution within Families of Medicinal Plants Used For the Treatment of Different Gynaecological Disorders in Lagos State, Nigeria*

S/N	Family	Number of Species
1	Amaryllidaceae	1
2	Anarcadiaceae	2
3	Annonaceae	3
4	Apocynaceae	1
5	Bignoniaceae	2
6	Boraginaceae	1
7	Cactaceae	1
8	Curcubitaceae	2
9	Euphorbiaceae	4
10	Fabaceae	5
11	Hypoxidaceae	1
12	Icacinaceae	1
13	Iridaceae	1
14	Lamiaceae	1
15	Liliaceae	1
16	Longaniaceae	1
17	Loranthaceae	1
18	Lythraceae	1
19	Malvaceae	1
20	Meliaceae	1
21	Moraceae	1
22	Moringaceae	1
23	Myristicaceae	1
24	Nymphaeaceae	1
25	Olacaceae	1
26	Piperaceae	1
27	Poaceae	3
28	Polygalaceae	1
29	Plumbaginaceae	1
30	Rubiaceae	1
31	Solanaceae	1
32	Sterculiaceae	1
33	Vitaceae	2
34	Zingberaceae	1
35	Zygophyllaceae	1

4.3. Plant Habits, Parts used Modes of Preparation and Administration

The percentage occurrence of the life forms (Plant habits) of the medicinal plants identified for the treatment of various gynaecological disorders in Lagos State is as shown in Figure 3. The highest percentage of occurrence was observed in trees (52 %), followed by the herbs (20 %) while shrubs and creepers had 16 % and 12 % respectively.

The most commonly used plant parts were the leaves (29.03 %) and the bark (22.58 %) while the least commonly used plant part was the bulb (1.61 %) as shown in Figure 4.

Figure 5 is a representation of different methods of preparation of the medicinal plants used for the treatment of female gynaecological disorders. Most of the medicinal plants identified were prepared by decoction (48.08 %) and powdered form (23.08 %) while the least method used was eating the plant raw (1.29 %).

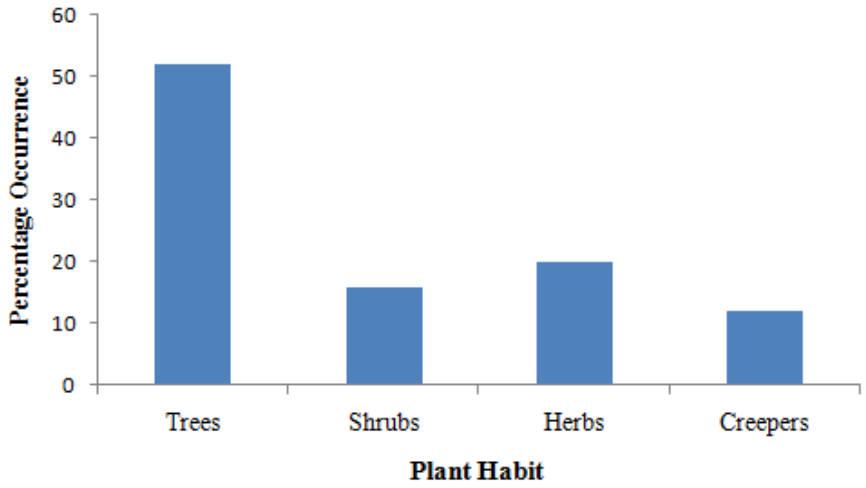

Figure3. *Percentage occurrence of the plant life forms used for gynaecological disorders in Lagos State, Nigeria*

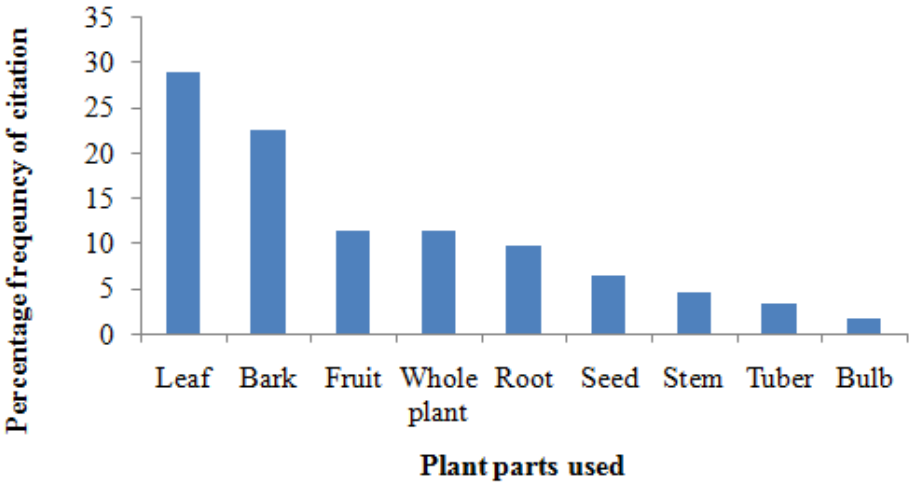

Figure4. *Percentage frequency of citation of plant parts used for gynaecological disorders in Lagos State, Nigeria*

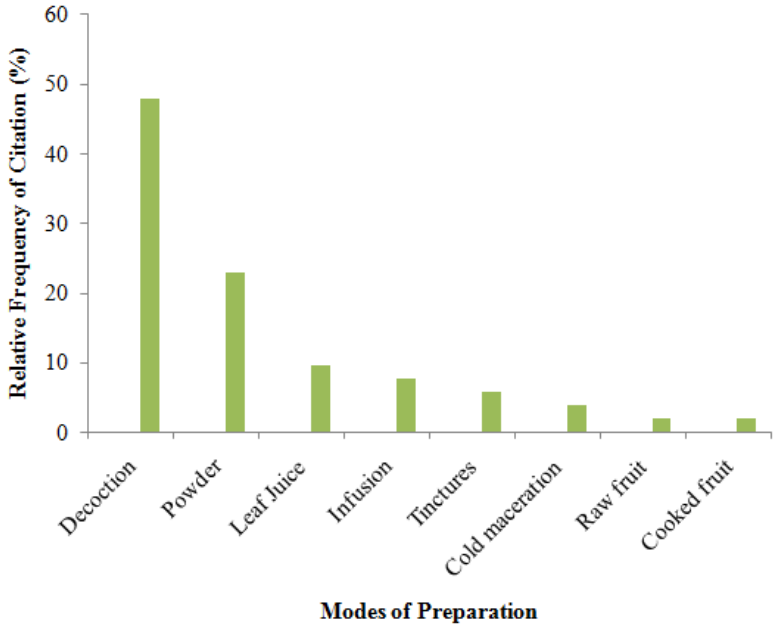

Figure5. *Percentage use of different modes of preparation of medicinal plants used for gynaecological disorders in Lagos State*

4.4. Qualitative Phytochemical Screenings

The results of the preliminary phytochemical screenings of the aqueous extracts of all the medicinal plants used in folkloric medicine for the treatment of various gynaecological disorders in Lagos State is shown in Table 4.The results of the preliminary phytochemical screenings showed that alkaloids were present in most of the plants except in *Polyalthia longifolia, Acacia nilotica, Treculia africana, Bambusa vulgaris and Cynodon dactylon* while tannins were absent only in *Heliotropium indicum, Colocynthis citrullus, Euphorbia laterifolia, Jatropha curcas, Treculia africana* and *Sorghum bicolor.* Phenols and flavonoids were present in all the plants while steroids were absent in *Spondias mombin, Heliotropium indicum, Jatropha curcas, Baphia nitida, Azadiratcha indica* and *Bambusa vulgaris* only. Phlobatannins were present only in ten (10) plant species; *Xylopia aethiopica, Opuntia dilenni, Euphorbia laterifolia, Jatropha curcas, Staudtia stipitata, Nymphaea lotus, Sorghum bicolor, Plumbago zeylanica, Rhaphiostylis beninensis and Viscum album.* Alkaloids have been widely reported to possess anti-inflammatory, analgesic and antimicrobial properties (Afolayan *et al*., 2013). The presence of the alkaloids in most of the medicinal plants identified may be responsible for the therapeutic actions against some of the gynaecological disorders such as pelvic inflammatory disease, vaginal infections, urinary tract infections and painful or sore breasts. Phenols and flavonoids have been reported to have antioxidant, anticancer, anti-mutagenic, anti-inflammatory and antimicrobial properties. They easily donate electrons to free radicals thereby prevent the onset of degenerative diseases (Oki *et al*., 2002). Most diseases including some gynaecological disorders are as a result of oxidative stress caused by the free radicals. Therefore, the presence of phenols and flavonoids in all the plants enumerated may suggest their ability to act as antioxidant against the free radicals caused by these disorders. Steroids have been reported to have aphrodisiac, antiviral and antibacterial properties. Oyedemi and Afolayan (2011) reported that steroids can improve sex hormones hence; they are useful in the treatment of sexual dysfunctions. Natural progesterone made from plant sterols called diosgenin has been reported to regulate hormonal imbalance and improves female hormones (Noguchi *et al*., 2006).

Table4. *Qualitative Phytochemical Screenings of Medicinal Plants Used for the Treatment of Gynaecological Disorders in Lagos State, Nigeria*

Plant	Alk	Tan	Phe	Sap	Ste.	Fla.	Proant	Antho	Gly	Phlo.
Allium cepa Linn.	+	+	+	+	+	+	+	+	+	-
Spondias mombin Linn.	+	+	+	+	-	+	-	-	+	-
Mangifera indica Linn.	+	+	+	+	+	+	+	+	+	-
Uvaria chamae P. Beauv.	+	+	+	+	+	+	+	-	+	-
Polyalthia longifoila (Sonn.) Thwaites	-	+	+	+	+	+	-	+	-	-
Xylopia aethiopica (Dunal) A. Rich.	+	+	+	-	+	+	+	+	-	+
Calotropis procera Ait.	+	+	+	+	+	+	+	+	-	-
Newbouldia laevis Seem.	+	+	+	+	+	+	+	-	-	-
Kigellia africana (Lam). Benth.	+	+	+	+	+	+	-	-	+	-
Heliotropium indicum Linn.	+	-	+	+	-	+	+	+	+	-
Opuntia dilenni (Ker-Gawl.) Haw.	+	+	+	+	+	+	-	+	-	+
Colocynthis citrullus (Linn) Schrad.	+	-	+	-	+	+	+	+	+	-
Momordica charantia Linn.	+	+	+	+	+	+	-	-	+	-
Euphorbia laterifolia Schum &Thonn.	+	-	+	+	+	+	+	-	+	+
Jatropha curcas Linn.	+	-	+	+	-	+	-	-	-	+
Ricinus communis Linn.	+	+	+	+	+	+	-	-	+	-
Tetracarpidium Conophorum (Mull.Arg.) Hutch.& Dalziel	+	+	+	+	+	+	+	-	+	-
Acacia nilotica Linn.	-	+	+	+	+	+	+	-	-	-
Baphia nitida Lodd.	+	+	+	+	-	+	+	+	-	-

Delonix regia (Hook.) Raf.	+	+	+	-	+	+	-	-	+	-
Pterocarpus osun Craib.	-	+	+	+	+	+	+	-	+	-
Mucuna pruriens Linn.	+	+	+	-	+	+	+	+	-	-
Curculigo pilosa (Schumach & Thonn.) Engl.	+	+	+	+	+	+	+	+	+	-
Rhaphiostylis beninensis (Hook.f.) Planch.	+	+	+	-	+	+	-	-	+	+
Gladiolus dalenii Van. Geel.	+	+	+	-	+	+	-	+	-	-
Ocimum sanctum Linn.	+	+	+	+	+	+	-	+	+	+
Aloe vera (Linn) Burm.f	+	+	+	-	+	+	+	-	-	-
Anthocleista djalolensis A. Chev.	+	+	+	-	+	+	+	-	-	-
Viscum album Linn.	+	+	+	+	+	+	+	+	+	+
Lawsonia inermis Linn.	+	+	+	+	+	+	+	-	+	-
Corchorus olitorus Linn.	+	+	+	+	+	+	+	+	-	-
Azadirachta indica A. Juss.	+	+	+	+	-	+	+	-	+	-
Treculia africana Decne.	-	-	+	+	+	+	+	+	+	-
Moringa oleifera Lam.	+	+	+	+	+	+	+	+	+	-
Staudtia stipitata Warb.	+	+	+	+	+	+	-	+	+	+
Nymphaea lotus Linn.	+	+	+	+	+	+	+	+	-	+
Olax subscorpiodiea Oliv.	+	+	+	+	+	+	-	+	-	-
Pepperomia pellucida (Linn). Kunth.	+	+	+	+	+	+	-	-	+	-
Sorghum bicolor Linn.	+	-	+	+	+	+	+	-	+	+
Bambusa vulgaris Linn.	-	+	+	+	-	+	+	-	-	-
Cynodon dactylon Linn.	-	-	+	+	+	+	-	-	-	-
Securidaca longipedunculata Fresen	+	+	+	-	+	+	+	-	+	-
Plumbago zeylanica Linn.	+	+	+	+	+	+	-	-	+	+
Morinda lucida Benth.	+	+	+	-	+	+	-	+	-	-
Withania somnifera Dunal.	+	+	+	+	+	+	+	+	+	-
Cola acuminata Schott & Engl.	+	+	+	+	+	+	-	-	+	-
Cissus populnea Guill & Perr	+	+	+	+	+	+	-	+	+	-
Cissus quadrangularis Linn.	+	+	+	+	+	+	+	-	-	-
Zingiber officinale Roscoe.	+	+	+	+	+	+	+	-	+	-
Tribulus terrestris Linn.	+	+	+	+	+	+	+	-	+	-

Character codes: Alk=Alkaloids, Tan=Tannins, Sap=Saponins, Phe=Phenols, Ste=Steroids, Fla=Flavonoids, Proanto=Proanthocyanidins, Antho=Anthocyanidins, Gly= Cardiac Glycosides, Phlo=Phlobatannins, +=Present, - =Absent.

5. CONCLUSION

The rich plant diversity of the study area and the indigenous herbal knowledge of the respondents helped in the documentation of the medicinal plants used in the treatment of gynaecological disorders in Lagos State. The type of phytochemicals present in the identified medicinal plants justified their usage in herbal medicine for the treatment of different gynaecological disorders in the study area. This documentation would increase the indigenous knowledge of herbal medicine in Lagos State and Nigeria as a whole. It would also be helpful for the conservation of the identified medicinal plants. The identified medicinal plants could serve as precursors for the development of novel drugs for the treatment of various gynaecological disorders.

ACKNOWLEDGEMENT

The authors acknowledge the Govan Mbeki Research Development Centre, University of Fort Hare for funding this study.

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Citation: *O. Sharaibi, "Ethno-Gynaeacological Knowledge and Preliminary Phytochemical Screenings of Medicinal Plants used in Lagos State, Nigeria", International Journal of Medicinal Plants and Natural Products (IJMPNP), vol. 3, no. 2, pp. 6-18, 2017. http://dx.doi.org/10.20431/2454-7999.0302002*