RESEARCH ARTICLE

INDIGENOUS USES AND PHYTOCHEMICAL CONTENTS OF PLANTS USED IN THE TREATMENT OF MENSTRUAL DISORDERS AND AFTER- CHILD BIRTH PROBLEMS IN ABEOKUTA SOUTH LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA

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ABSTRACT
A survey of plants used for the treatment of menstrual disorders and after-child birth problems was conducted in Abeokuta South Local Government. Hundred (100) questionnaires were administered using multi stage sampling method on traditional herbal practitioners. Ethnobotanical information such as, plants and plant parts used, methods of extraction used and mode of administration of the herbal preparations of these plants were requested. Also, phytochemical contents of the most frequently mentioned plants were determined. Data were subjected to Analysis of variance (ANOVA) with probability set at p<0.05 and descriptive statistics. Results revealed that a total of fifty-six (56) plants belonging to 37 families were mentioned. The most frequently mentioned families are Euphorbiaceae, Leguminoseae, Anacardiacae, Apocynaceae, Araceae and Combretaceae. Sesamum indicum, Dioclea sarmentosa, Clausena anisata, Anogeissus leiocarpus, Alafia barteri, Tetrapleura tetraptera, Daniella oliveri, Lannea egregia and Alstonia boonei were the most frequently mentioned plants used in the treatment of menstrual disorders and after-childbirth problems. Leaves (34%), fruits (7%), flowers (3%), tubers (2%), stem-barks (28%), seeds (11%), roots and barks (2%) and roots (13%) were the plants reported being used for the remedy of these disorders. Decoction (54%), squeezing (9%), grinding/squeezing (14%), paste (4%), exudation (4%), cooking (4%), soaking/decoction/infusion (4%), and heating to ashes (4%) were the methods of extracting the bioactive principles of the plants using water (79%) as major solvent. Significant difference (P<0.05) was observed in the quantities of tannins recorded in the leaves of Sesamum indicum, Dioclea sarmentosa, Clausena anisata, Anogeissus leiocarpus and Alafia barteri. Similar observations were found in the quantities of saponins, alkaloids, flavonoids and phenol. Highest values of tannins (0.32mg/g), saponins (1.07mg/g), alkaloids (5.16mg/g), flavonoids (3.12mg/g) and phenol (0.09 mg/g) were determined in the leaves of Clausena anisata, Sesamum indicum, Dioclea sarmentosa and Alafia barteri. Across the roots of these plants, similar amount of tannins and saponins were quantified. This observation varied significantly when compared with alkaloids, flavonoids and phenol quantified in the roots of plants. Highest tannins (1.67mg/g) and saponins (3.33 mg/g) were recorded in the roots of Dioclea sarmentosa, alkaloids (4.33 mg/g) and flavonoid (6.33 mg/g) in Anogeissus leiocarpus while phenol (1.33 mg/g) was recorded in roots of Sesamum indicum.

Key words: Menstrual Disorders, Childbirth Problems, phytochemical contents, Traditional practitioners, Indigenous plants

INTRODUCTION
Menstrual disorder and after problems such as amenorrhea, dysmenorrhea, menorrhagia, oligomenorrhea, after child birth pains, achy muscles, constipation, hemorrhoids and sore breasts (Nitta et al., 2002) are among some of the major challenges in various maternity homes and hospitals in Nigeria since majority of people are poor -famers and middle- men who in their local communities are poorly served with modern health facilities even at their pregnancy state and could not afford the exorbitant prizes of modern drugs. Disturbances of menstruation, either actual or perceived, are the most common presenting complaint of adolescents attending gynecology clinics. Problems associated with menstruation actually affect 75% of adolescent females and are a leading cause of such visits to physicians (Hajaratu et al., 2014). Also, postpartum depression has been reported to adversely affect mothers, their newborn infants, their partners and the society. The prevalence of postpartum depression among mothers was 30.6% at an Edinburgh Postnatal Depression scale (EPDS). Ukaegbe et al., 2012.

To avert this health challenge, plants play significant roles during pregnancy, birth and postpartum care in many rural areas of the world most especially developing country such as Nigeria. This is because Nigerian ecosystems are naturally endowed with arrays of floristic composition of different plant forms and resources (Olajide, 2003), thus enabling them to
increase interest in traditional practices of health care as a complement to biomedical health care and part of primary health care delivery system in Nigeria (Sheldon et al., 1997).

Numerous botanicals with medicinal properties suitable for control and management of women’s health related conditions such as, menorrhea, birth control, pregnancy, birth (parturition), postpartum, lactation and infant care, have been documented for various ethnic groups.

The postpartum period is important in many cultures, and is regarded as a period of recovery and confinement ranging from 10 up to 45 days. In accordance with humoral medicine, pregnancy is described as a hot state. During this parturition, heat is lost and the woman comes into a state of excess cold. Confinement as a treatment such as staying inside and near heat, washing only with hot water, drinking hot drinks, eating hot food, steam bath and bathing and staying away from draughts have been reported as measures of managing the situation(Davis, 2001).

This study was carried out to identify and characterize botanicals used for management of menstrual disorders and after childbirth problems. Also, Phytochemicals contents of most prioritized plants were evaluated.

MATERIALS AND METHODS

STUDY AREA

Abeokuta is the capital of Ogun state and traditionally home of Egbas stratified into Abeokuta North and Abeokuta south Local Government Area. The Egbas have been traditionally divided into four (4) namely Egba Ake, Oke-Ona,Gbagura and Owu. Three types of religion are widely practiced by the people. The religion includes Christianity, Islam and traditional religion. The Christian religion is predominant (Adekunle and Oluwalana, 2000). Geographically, Abeokuta lies on latitude 7°15N and longitude 3°25E. The town is about 81 km south- west of Ibadan, the Oyo State capital and 106km North of Lagos, former Nigerian capital city. Abeokuta has humid weather with an average temperature of about 27.4° C and an annual rainfall of 128 cm in the southern part of the city to 105 cm in Northern part. The Ogun river transverses through the town from the south to the western part.

The main occupation of the Egba people is farming, local textile,(Tie and dye), trading, pottery and industry.

STUDY SITE

A total of five (5) markets; Omida, Itoku, Adatan, Kuto and Panseke were visited. During the survey various shops of herbal practitioners were visited and the indigenous people were also interviewed to elicit information on the plants used for the treatment of menstrual disorders and after childbirth problems.

Methodology of the study

The study was carried out in the following stages:

Stage 1: Collection and review of published and unpublished literatures on plants used for treatment of menstrual disorder and after birth problems in Abeokuta, Ogun State, Nigeria

Stage 2: Questionnaire administration

Sampling procedure and data collection

A three stage design was adopted to collect data during this study.

Stage 1: Selection of Abeokuta south Local Government areas to represent primary collection unit;

Stage 2: Purposive selection of 5 markets in the selected Local Government Area

Stage 3: Random selection of 20 respondents (herbal practitioners comprising herbal sellers and herbal and traditional healers) in the Local Government

Table 1: Sampling design

| Markets | Number of respondents selected |
|---------|--------------------------------|
| Kuto    | 20                             |
| Adatan  | 20                             |
| Panseke | 20                             |
| Itoku   | 20                             |
| Omida   | 20                             |
| Total population of the study | 100 |

A total of 100 questionnaires administered were validated and reliability test of the questionnaire was also carried out.

Table 2: Reliability Statistics

| Cronbach's Alpha | Number of Items |
|------------------|-----------------|
| 0.77             | 20              |

Quantitative phytochemical screening of leaves and roots of most frequently mentioned plants

Phytochemical contents such as tannins, saponnins, alkaloids, flavonoids and phenol of leaves and roots of the most frequently mentioned plant were carried out using methods of Ojewumi and Kadiri, 2001

Statistical Analysis

Data were subjected to Analysis of variance (ANOVA) and separation of means by Duncan’s multiple ranges Test (DMRT) at P≤0.05.

RESULTS

Larger number of the respondents 71 (72.4%) were females. Majority of the respondents (traditional practitioners) 44(44.45) were between the age 21-40years while least of them 11(11.1%) were less than 21 years. Islam was the predominant religion of the respondents. Also, Majority of the respondents (83.8%) acquired formal education (Table 3).
Fifty-six (60) plant species belonging to 37 families were collated out of which Euphorbiaceae, Leguminosae, Anacardiaceae and Apocynaceae were the most frequently mentioned families. The most frequently mentioned plants were Sesamum indicum, Dioclea sarmentosa, Clausena anisata, Anogeissus leiocarpus and Alafia barteri (Table 4). The life forms of plants collated during this study ranged from trees to herbs out of which trees were the most mentioned (Table 5).

Largest number of traditional practitioners 42 (43.8%) were herb sellers with more than ten (10) years work experience in the business. They obtained their herbal knowledge mainly by training as denoted by 51.1 percent. 82.2 percent of them claimed to treat either of disorders on weekly basis. Fifty four percent (54%) of the herbal practitioners reported that the plants were cultivated at home gardens (Table 7).

The plant collated during this survey were reportedly being used indifferent forms such as dry (28%), fresh (65%) and combination of dry and fresh (7%) depending on the availability of the plants and severity of the diseases. Several plant parts such as leaves (34%), fruits (7%), flower (3%), tuber (2%), stem-bark (28%), seeds (11%) , roots and barks (2%) and roots (13%) were reported (Figure 2). Decoction (54%), squeezing (9%), grinding/squeezing (14%), paste (4%), exudation (4%), cooking (4%), soaking/ decoction/infusion (4%), and heating to ashes (4%) were the methods of extracting the bioactive principles of the plants using water (79%) as major solvent (Figure 3 and 4). Preparations from these plants were reported to be taken 2-3 times daily (Figure 5).

Largest number of the traditional practitioners indicated that most of the plants were cultivated in their home gardens (55.1%), followed by forest plants (26.5%) while the least of them indicated swampy areas (4.1%) as the sources of the plants used as remedies for menstrual disorders and after birth problems (Table 7).

Table 8 revealed the mean values of phytochemical contents of the leaves of plant commonly used for treatment of menstrual disorders and after childbirth problems in Abeokuta south Local Government Local Area, Abeokuta. There was significant difference (P<0.05) in the quantities of tannins recorded in some of the leaves of Sesamum indicum, Dioclea sarmentosa, Clausena anisata, Anogeissus leiocarpus and Alafia barteri. Similar observations were recorded in the quantities of saponins, alkaloids, flavonoids and phenol. Also, except sesanum indicum, no significant (P>0.0) amount of saponins was recorded in Dioclea sarmentosa, Clausena anisata, Anogeissus leiocarpus and Alafia barteri. Highest values of tannins (0.32mg/g), saponins (1.07mg/g), alkaloids (5.16mg/g), flavonoids (3.12 mg/g) and phenol (0.09 mg/g) were determined in the leaves of Clausena anisata, Sesamum indicum, Dioclea sarmentosa, Alafia barteri (Table 8).

Across the roots of these plants, similar amounts of tannins and saponins were quantified. This observation varied significantly when compared with alkaloids, flavonoids and phenol quantified in the roots of plants. Highest tannins (1.67mg/g) and saponins (3.33 mg/g) were recorded in the roots of Dioclea sarmentosa, alkaloids (4.33 mg/g) and flavonoid (6.33 mg/g) in Anogeissus leiocarpus while phenol (1.33 mg/g) was recorded in roots of Sesanum indicum (Figure 9).

Table 3: Demographic profile of respondents of the study area

| Variables          | Frequency | Percentage frequency | Mode |
|--------------------|-----------|----------------------|------|
| Sex                |           |                      |      |
| Male               | 27        | 27.6                 |      |
| Female             | 71        | 72.4                 | 72.4 |
| Age (years)        |           |                      |      |
| less than 21       | 11        | 11.1                 |      |
| 21-40              | 44        | 44.4                 | 44.4 |
| 41-60              | 29        | 29.3                 |      |
| More than 60       | 15        | 15.2                 |      |
| Religion           |           |                      |      |
| Christianity       | 15        | 15.5                 |      |
| Islam              | 59        | 60.8                 | 60.8 |
| Traditional        | 22        | 22.7                 |      |
| Educational status |           |                      |      |
| Primary            | 34        | 34.3                 | 34.3 |
| Secondary          | 33        | 33.3                 |      |
| Tertiary           | 16        | 16.2                 |      |
| No formal education| 16        | 16.2                 |      |
Table 4: Plants commonly used for control and management of menstrual disorder and after birth problems in Abeokuta south Local Government Local Area, Abeokuta, Ogun State.

| Scientific name                  | Local name | Common name      | Family         | Habitat         | Part used       |
|----------------------------------|------------|------------------|----------------|-----------------|-----------------|
| Abelmoschus esculentus           | Ila pupa   | Red okra         | Malvaceae      | Shrubs          | Seeds           |
| Aframomum melegueta              | Ature      | Alligator peper  | Zingiberaceae  | Herbs           | Seeds           |
| Alafia barteri                   | Agbari etu | Guinea fowl’s crest | Apocynaceae | Climbing shrubs | Leaves          |
| Allium ascalonicum               | Alubosa elewe | Shallot        | Liliaceae     | Herbs           | Leaves          |
| Alstonia boonei                  | Awun       | Stool wood       | Apocynaceae    | Tree            | Stem barks      |
| Anogeissus leiocarpus            | Orin dudu  | African birch    | Combretaceae   | Tree            | Stem bark       |
| Aristolochia repens             | Akogu      | Dutchman’s pipe  | Aristolochiaceae | Herbs          | Leaves          |
| Basella alba                     | Amunututu  | Indian spinach   | Basellaceae    | Herbs           | Leaves          |
| Bridelia ferruginea              | Ira        | Bridelia        | Euphorbiaceae  | Tree            | Stem bark       |
| Calotropis procera               | Bomu bomu  | Giant milk weed  | Asclepiadaceae | Shrubs          | Leaves          |
| Capsicum frutescens             | Ata ijos  | Hot pepper       | Solanaceae     | Herbs or Shrubs | Seeds           |
| Carica papaya                   | Ibepe      | Pawpaw           | Caricaceae     | Shrubs          | Roots           |
| Celaia petandra                 | Araba      | Silk cotton tree | Bombacaceae    | Tree            | Roots           |
| Cissampelas mucronata            | Jenjoko/Jokoje | Ivy vine        | Menispermacae  | Shrubs or herbs | Leaves          |
| Cissus quadrangularis            | Olowomefa  | Edible stemmed vine | Vitaceae    | Herbs           | Stem barks      |
| Citrus medica                    | Osan       | Citron           | Rutaceae       | Shrubs or Tree  | Fruits          |
| Clausena anisata                | Ata pari obuko | Horse wood tree | Rutaceae     | Tree            | Root            |
| Cocos nucifera                  | Agbon      | Coconut palm     | Areceaceae     | Tree            | Fruits          |
| Costus afer                      | Teteregun  | Common ginger lily | Costaceae   | Herbs           | Seeds           |
| Croton lobatus                   | Eru alamo  | Garden croton    | Euphorbiaceae  | Herbs           | Fruits          |
| Culcasia scandens                | Aggunmonu  | Climbing arum    | Araceae        | Climbing herbs  | Leaves          |
| Daniella oliver                  | Iya        | Balsam tree      | Leguminoaceae  | Tree            | Stem barks      |
| Dicraptalam toxicarium           | Ewo        | West African rats | Chailleriaceae | Shrubs          | Roots           |
| Dioscela sarmentosa              | Dasha      | Sea beans        | Leguminoase    | Climbers herbs  | Leaves          |
| Dioscela sarmentosa              | Dasa       | Sea beans        | Leguminoaseae  | Herbs           | Leaves          |
| Euphorbia hirta                  | Emi-ile    | Asthma-weed      | Euphorbiaceae  | Herbs           | Leaves          |
| Garcinia kola                    | Orogbo     | Bitter kola      | Guttiferae     | Tree            | Stem barks      |
| Hibicus acetoellla               | Akese      | African rose mallow | Malvaceae   | Shrubs          | Leaves          |
| Hunteria umbellata               | Abeere     | Demouan          | Apocynaceae    | Tree            | Roots and barks |
| Irvingia gabonensis              | Oro        | African mango    | Irvingiaceae   | Tree            | Stem barks      |
| Jatropha curcas                  | Botuje     | Physic nut      | Euphorbiaceae  | Shrubs          | Leaves          |
| Jatropha gossypifolia            | Botuje pupa | Wild cassava    | Euphorbiaceae  | Shrubs          | Leaves          |
| Lannea egregia                   | Ekudan     | False marula    | Anacardaceae   | Tree            | Stem bark       |
| Lannea egregia                   | Epo ekudan | Woodier wood    | Anacardaceae   | Stem bark       |                |
| Lawsonia inermis                 | Laali      | Henna plant     | Lytheraceae    | Tree            | Flowers         |
| Lophira lanceolata               | Paran pupa | Dwarf red ironwood | Ochnaceae    | Tree            | Stem barks      |
| Mangifera indica                 | Mangoro    | Mango           | Anacardiacae   | Tree            | Fruits          |
| Momordica charantia              | Ejirin     | Bitter gourd    | Cucurbitaceae  | Herb            | Leaves          |
| Morus alba                       | Aye        | White mulberry  | Moraceae       | Tree            | Stem barks      |
| Ocimum basilicum                 | Efinrin wewe | Sweet basil    | Labiateae      | Herb            | Leaves          |
| Olax subschoioidea               | Ifon       | Olax            | Olaceae        | Shrubs or Tree  | Roots           |
| Parinari spp                     | Abeere     | Hissing tree    | Rosaceae       | Tree            | Seeds           |
| Phyllanthus muellerianus         | Asasa      | Leafflower      | Euphorbiaceae  | Shrubs or Herbs | Stem barks      |
| Piliostigma thomningii           | Abafe      | Kargo           | Caesalpiniaceae | Tree            | Stem barks      |
Table 5: Life forms of plants collated in Abeokuta South Local Government

| Life forms                  | Frequency | Percentage frequency |
|-----------------------------|-----------|----------------------|
| Trees                       | 24        | 40.0                 |
| Shrubs or tree              | 3         | 5.0                  |
| Shrubs                      | 9         | 15.0                 |
| Herb or shrubs              | 3         | 5.0                  |
| Herbs                       | 16        | 26.67                |
| Climbing shrubs             | 5         | 8.33                 |
| Total                       | 60        |                      |

Table 6: Recipes used in the treatment of menstrual disorders after birth problems

| Diseases                             | Recipes                                                                 | Traditional solvent of choice | Method of preparation | Method of administration |
|--------------------------------------|-------------------------------------------------------------------------|------------------------------|-----------------------|--------------------------|
| Painful menstruation                 | Dioclea sarmentosa, Sesamum indicum, Aloe barteri                      | Water                        | Decoction             | Take decoction 2-3 times daily |
| Menorrhagia (excessive menstrual bleeding) | Dioclea sarmentosa, potash/alum                                       | Water                        | Decoction             | Oral consumption of decoction of Leaves |
| Irregular menstrual flow             | Jatropha gossypifolia and Dioclea sarmentosa                           | Water                        | Squeezing             | Oral consumption of juice from squeezed leaves |
| Heavy menstruation                  | Jatropha curcas                                                        | Water                        | Decoction             | Bath private part with decoction |
| Foul smell of menstrual discharges   | Sesamum indicum, Pterocarpus osun, Plumbago zeylanica, Piper guineensis, Sulphur, Citrus medica, | Local gin                   | Grinding/ Squeezing   | Take orally (200-250ml once daily) |
| Ceased menstruation                 | Abelmoschus esculentus                                                | Local gin                   | Heating to ashes      | Take orally               |
| Painful menstruation                | Hibiscus acetosella, Dioclea sarmentosa, Sesamum indicum              | Water                        | Decoction             | Take orally               |
| Abdominal pain                      | Sorghum bicolor, Scleria racemosa, Pterocarpus osun, Dichapetalium toxicarium, potash, Pterocarpus osun, Potash, Phyllanthus muellerianus, Dioclea sarmentosa, Stephania | Water                        | Decoction             | Take orally every night   |
| Problem                        | Plant(s)                                      | Constituents          | Method(s)                                      | Medication |
|-------------------------------|----------------------------------------------|-----------------------|------------------------------------------------|------------|
| Dysmenorrhea                  | Momordica charantia                          | Lawsonia inermis      | Water, Decoction                                | Take orally |
| Blackish colour in menses     | Senna alata, Potash, Pap                     |                       | Water, Grind flower to powder                   | Take orally |
| Menorrhagia                   | Ceiba petandra                               |                       | Water, Exudation from the trunk                 | Take as tonic |
| Premenstrual syndrome         | Cissus quadrangularis                        |                       | Water, Cooking                                  | Drink      |
| Black menses                  | Phyllanthus muellerianus                     |                       | Water, Decoction                                | Drink      |
| Antiperiodic problem          | Rauwolfia vomitoria                          |                       | Water, Grinding                                 | Drink      |
| After childbirth problems     |                                              |                       |                                                |            |
| Stomach pain                  | Capsicum frutescens, Aframomum melegueta,    | Capsicum frutescens   | Local gin, Soaking/Decoction                    | Taken orally |
|                               | Sorghum bicolour, Lannea egregia, Daniellia Oliveri, Lannea egregia, Anogeissus leiocarpus, Piliostigma thonningii | Pterocarpus osun, Sorghum bicolour, Lannea egregia, Daniellia oliveri, Lannea egregia, Anogeissus leiocarpus, Piliostigma thonningii | | |
| Bleeding after delivery       | Basella alba, Cissampelos mucronata,         | Basella alba, Cissampelos mucronata, Stephania sarmentosa | Water, Decoction                                | Drink 2-3 times daily |
|                               | Spondias mombin, Irvingia gabonensis         | Spondias mombin, Irvingia gabonensis | Fermented maize water, Decoction                 | Drink hot after cooking |
| Bleeding after delivery       | Olax subdcpioidea, Costus afer, Pistia       | Olax subdcpioidea, Costus afer, Pistia stratiotes, Ocimum basilicum, Xylopia aethiopica, Tetrapleura tetraptera, Anogeissus leiocarpus, Terminalia avicenniodiodes, Xylopia aethiopica | Local gin, Decoction | Bathe affected part |
| Breasts infection             | Stephania sarmentosa, Cissampelos mucronata, | Stephania sarmentosa, Cissampelos mucronata, Basella alba | Water, Squeezing                                | Drink      |
| Pains in the breast           | Garcinia kola, Astonia boonei, Clausena      | Garcinia kola, Astonia boonei, Clausena anisata, Culcasia scandens, Alafia barteri | Water, Decoction                                | Drink      |
| Stomach ache                  | Lophira lanceolata, Aristolochia repens,     | Lophira lanceolata, Aristolochia repens, Hunteria umbellate | Water, Decoction                                | Take orally |
| Bleeding after delivery       | Irvingia gabonensis, Allium                  | Irvingia gabonensis, Allium ascalonicum, Gnetum africanum | Water, Decoction                                | Take orally |
| Lactation problem             | Calotropis procera Carica papaya             | Calotropis procera Carica papaya Euphorbia hirta | Water, Grind leaves with local soap/decoction/infusion | Wash breast thrice daily, oral application |
Table 7: Experience of herbal practices of the traditional practitioners of the study area

| Parameter                                  | Frequency | Percentage frequency | Mode |
|--------------------------------------------|-----------|----------------------|------|
| Herbal Practice specification              |           |                      |      |
| Herbalist                                  | 5         | 5.2                  |      |
| Herb sellers                               | 42        | 43.8                 | 43.8 |
| Traditional Medical practitioner           | 13        | 13.5                 |      |
| TMP/Herb sellers                           | 22        | 22.9                 |      |
| Trained Medical Practitioner               | 14        | 14.6                 |      |
| Source of knowledge                        |           |                      |      |
| Ancestral                                  | 26        | 28.3                 |      |
| Training                                   | 47        | 51.1                 | 51.1 |
| Divination                                 | 7         | 7.6                  |      |
| Ancestral/ Training                        | 12        | 13.0                 |      |
| Years of herbal practice experience        |           |                      |      |
| 1-5 years                                  | 21        | 21.2                 |      |
| 6-10 years                                 | 37        | 37.4                 |      |
| More than 10 years                         | 41        | 41.4                 | 41.4 |
| Duration of treatment                      |           |                      |      |
| 1 week                                     | 60        | 82.2                 | 82.2 |
| 2 weeks                                    | 8         | 11.0                 |      |
| More than 2 weeks                          | 5         | 6.8                  |      |
| Sources of plants                          |           |                      |      |
| Forest alone                               | 26        | 26.5                 |      |
| Cultivated at home garden                  | 54        | 55.1                 | 55.1 |
| Swamp                                      | 4         | 4.1                  |      |
| Market                                     | 7         | 7.1                  |      |
|Forest and cultivated around house garden   | 3         | 3.0                  |      |
| Swamp and cultivated herb garden           | 4         | 4.1                  |      |
| Accompanied verbal instruction              |           |                      |      |
| Yes                                        | 2         | 2.1                  |      |
| No                                         | 92        | 97.9                 | 97.9 |

Figure 1: Forms of plants collection

Figure 2: Plant parts used
Table 8: Mean values of phytochemical contents of the leaves of plant commonly used for treatment of menstrual disorders and after childbirth problems in Abeokuta south Local Government Local Area, Abeokuta, Ogun State.

| Plants/parts( leaves)   | Phytochemicals         | Tannins (mg/g) | Saponins (mg/g) | Alkaloids (mg/g) | Flavanoids (mg/g) | Phenol (mg/g) |
|-------------------------|------------------------|----------------|-----------------|------------------|-------------------|--------------|
|                         |                        |                |                 |                  |                   |              |
| Sesanum indicum         |                        | 0.04±0.02      | 1.07±0.03       | 3.15±0.07        | 1.13±0.06         | 0.03±0.013    |
| Dioclea sarmentosa      |                        | 0.23±0.01      | 0.89±0.04       | 5.16±0.09        | 2.69±0.03         | 0.06±0.02     |
| Clausena anisata        |                        | 0.32±0.03      | 0.72±0.03       | 3.79±0.26        | 1.86±0.03         | 0.05±0.01     |
| Anogeissus leocarpus    |                        | 0.14±0.07      | 0.68±0.16       | 2.31±0.15        | 2.01±0.05         | 0.05±0.03     |
| Alafia barteri          |                        | 0.19±0.02      | 0.69±0.12       | 4.12±0.29        | 3.12±0.02         | 0.09±0.02     |

Means followed by the same letters on the same columns are not significantly different according to Duncan’s Multiple Range Test at p<0.05.

Table 9: Quantitative phytochemical screening of the roots of plants mostly used in the treatment of menstrual disorders and after-childbirth problems.

| Plants/parts( roots)   | Phytochemicals         | Tannins (mg/g) | Saponins (mg/g) | Alkaloids (mg/g) | Flavanoids (mg/g) | Phenol (mg/g) |
|------------------------|------------------------|----------------|-----------------|------------------|-------------------|--------------|
|                        |                        |                |                 |                  |                   |              |
| Sesanum indicum        |                        | 0.74±0.74      | 1.33±0.33       | 2.33±0.33        | 2.33±0.33         | 1.33±0.33     |
| Dioclea sarmentosa     |                        | 1.67±0.33      | 1.67±0.34       | 2.01±1.01        | 1.00±0.01         | 0.33±0.33     |
| Clausena anisata       |                        | 1.01±0.58      | 2.67±1.20       | 3.3±0.33         | 6.3±0.33          | 0.67±0.33     |
| Anogeissus leocarpus   |                        | 0.67±0.33      | 3.3±1.2         | 4.3±0.33         | 4.4±0.31          | 0.89±0.11     |
| Alafia barteri         |                        | 1.67±0.67      | 1.67±0.66       | 3.3±0.29         | 4.4±0.31          | 0.89±0.11     |

Means followed by the same letters on the same columns are not significantly different according to Duncan’s Multiple Range Test at p<0.05.

DISCUSSION

The present study reveals that people of Abeokuta are well versed with the nature and natural resources around them despite the harsh environmental factors being faced by these plants. These people in an attempt to get rid of various diseases such as menstrual disorder and after birth problems depend on plant products found in their immediate environment due to no or poor health facilities that were made available for them.

The observation that majority of the traditional practitioners claimed to treat either of the diseases on...
Prominent plant species mentioned during this study were *Sesamum indicum*, *Dioclea sarmentosa*, *Clausena anisata*, *Anogeissus leiocarpus*, *Alafia barteri*

Various parts of plant especially leaves, roots, stem barks, seeds, fruits and whole plants were mentioned to be efficient in the treatment of menstrual disorders and postpartum health challenges among women in Abeokuta South Local Government Area. However, Leaves were reported to be the most frequently used plant parts; this could be an indication that leaves are sites where more phytochemicals are synthesized via photosynthesis (Odutuga et al., 2010; Kadiri et al., 2014). Although plants were reported to be used in various forms such as dry, fresh and in combination of both but preference was given to the use of the plants when they are freshly collected. This could be an indication that medicinal contents of plants are readily available when the plants are freshly collected and used immediately as some of the medicinal metabolites of some of these plants are volatile. This corroborates the findings of Devi Prasad et al., 2014 who reported that fresh plant material was used to prepare remedies as mixtures of multiple ingredients from different plants.

Some of the leaves are prepared from a single plant specie, for example, *Momordica charantia*, *Ceiba pentandra*, *Cissus quadrangularis*, *Phyllanthus muellerianus* while *Capsicum frutescens*, *Afromomum melegueta*, *Aframomum melegueta*, *Capsicum frutescens* *Pterocarpus osun*, *Sorghum bicolour*, *Lannea egregia* Danelliell oliveri, *Lannea egregia*, *Anogeissus leiocarpus* and *Piliostigma thonningii* are used in combinations with other common plants, as the combination of the plants was claimed to have higher medicinal effects on the treatment of the diseases although the respondents could not provide scientific reason for this findings. However, this observation could be justified with findings of Kadiri et al., 2013 who reported that malaria herbal preparations work better if two or more plants parts are prepared, as the phytochemicals of one part enhance the activities of the other.

Method of preparation varies; decoctions and grinding into powder are the most frequently used methods, this may be due to the type of plant part used and the choice of solvent in preparing the herbal remedies. Most of the herbal preparations collated during this study were reported to be used by oral application and bathing. It was found out from the practitioners that the plants administered as decoctions were characterized with tough leaves, bark and even the roots. They therefore had to be boiled longer to soften their parts before being administered. This method however, may not be most appropriate since the subjection of the plant material to high temperature is highly likely to alter the chemical composition of the plant, especially the very volatile ones as reported in past research studies (Okach, 2013; Jeruto et al., 2011).

Infusion method was used to administer the herbs that had delicate soft parts where plant leaves or the whole plant were dipped in hot water and left for some time for the active ingredients to be extracted. The plants that were macerated were found also to have highly soluble chemical components that would easily dissolve in cold water when left overnight in a covered container, as has also been reported in the past (Okach, 2013).

The result of this survey showed that majority (96%) of the respondents claimed no occurrence of side effects following patients’ use of herbal preparations. It could be that, the herbal preparations do not have any undesirable effects when used.

Quantitative phytochemicals studies on the most frequently mentioned plants helped to understand the pharmacological actions of the active compounds in these plants.

It has been proved scientifically that environmental factors and agricultural practices may significantly influence productivity, oil content and chemical composition of plant species (Daniel et al., 2011). The phytochemicals analysis conducted revealed that all the plant species collected contained tannins and saponins, alkaloids, saponins and phenol.

The observation that plants such as *Sesamum indicum* *Pterocarpus osun*, *Plumbago zeylanica*, *Piper guineensis*, *Saltur*, *Citrus medica* reported in this study were used for the management of these diseases is a clear indication that such plants have active medicinal values. The various medicinal properties exhibited by the various phytochemicals are useful in the treatment of most common ailments more importantly menstrual disorder and possible health challenges women do experience at postpartum.

These phytochemicals according to the literatures help in the purification of blood and excessive vaginal discharge and fight uterus infection (Tarun Chandra Taid et al 2014). Also, Shadma and Naheed, 2014 reported that plants were used to treat menstruation problems, for infant care and postpartum recovery. In the similar trend, Tarun Chandra Taid et al 2014 reported that herbal preparation during and after pregnancy help fight uterus infection, restore menstruation irregularity, stop excessive bleeding during menstruation, heal wound caused by contraction in relation of pelvic girdle experienced during parturition and act as energy stimulants which provide stamina to women after giving birth. Findings of Owu, 2004 revealed that the expectorant property of medicinal plants is attributed to the presence of saponins due to their ability to produce form which act as cleansing agent.

The observation that the metabolites of the plants were found both in the leaves and roots of these plants is a clear indication that the two parts under consideration are rich in phytochemicals that are active in the treatment of these aiments. The study also revealed that some plants collated are characterized by phytochemical contents active in the treatment of menstrual disorders and after-childbirth problems. Ikeyi and Omei, 2014 in their work on a review of the Ethno-therapeutics of medicinal plants used in traditional/alternative medicinal practice in Eastern Nigeria reported that plants collated were observed to

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contain potential chemo preventive agents, viz: Alkaloids, Glycosides, and Saponins, Phytosterol, flavonoids and phenol compounds in varying quantities. The observation of tannins in these plants could have oxidation inhibiting activity and confer good flavour on leaves (Nwauzoma, et al., 2013). The presence of saponin is well reported in plants (Belewu et al., 2009), where they served as expectorants and emulsifying agents. Saponins are glycosides with distinctive foaming characteristics (Nwauzoma, et al., 2013).

**CONCLUSION**

It could be concluded that although few people can still afford the financial demands of modern drugs for simple and complicated diseases yet majority of people in Abeokuta South Local Government depend on medicinal plants for the treatment of menstrual disorders and after childbirth problems. Also, considering the undisputed role played by these medicinal plants in the modern day world in the health care system of rural populace, it is of utmost importance that these plants are cultivated, propagated and protected. Younger generation should be encouraged towards tapping wealth from what they regarded as wastes.

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