Indigenous Knowledge of Herbal Medicines among Adolescents in Amassoma, Bayelsa State, Nigeria

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Abstract

Background: The use of herbal medicines in Nigeria is on the increase. Documented Population based data on the use of herbal medicinal products and indigenous knowledge among the younger generations are lacking in Nigeria and Africa at large.

Aim: The aim of this study is to investigate the extent of use and general knowledge of herbal medicines among adolescents in the Niger Delta Region of Nigeria.

Methods: The study covered a total of Two hundred and twenty-eight adolescents randomly selected in Senior Secondary Schools (SSS 1-3) in Amassoma using a semi structured questionnaire/Interview and informal conversation on the respondents.

Findings: Nearly all (97%) the respondents have had contact with herbs. Less than 1% had contact with herbs through formal education (teachers/literatures). Stimulation of interest was majorly through parents (53%). Grandparents were the highest (46%) of custodian of indigenous knowledge. Parents were the next (39.7%). Only 39% of the respondents would prefer the use of herbal medicine to modern medicine. Fever was the main ailment mentioned followed by eye ailment and stomach ache. Vernonia amygdalina was the main plant for the treatment of fever.

Conclusion: The study revealed that parents are the major custodians of knowledge being transferred to the younger generation and little or none is learnt from Schools. There is therefore the need to include the study of herbal medicines in School’s curricula especially at SS 2 and SS 3 since they are matured enough to appreciate the importance of Herbal medicine so as to prepare them for the promotion of herbal medicine in future and to preserve our indigenous knowledge.

Keywords: herbal medicines, indigenous knowledge, secondary schools, Niger Delta

1. Introduction

Herbal medicines are drugs made from herbs or plants. They are also commonly referred to as phytomedicines, plant medicines, green medicines, traditional medicine potions, traditional remedies, plant drugs and forest health products among others (Osemene, 2011; Elujoba, 1998). They are also referred to as finished labelled medicinal products that contain as active ingredients aerial or underground parts of plants or other plant materials or combinations thereof whether in the crude state or as plant preparations (WHO, 1996). Plant products include juices, gums, fatty oils and other secondary metabolites such as alkaloids, flavonoids, anthraquinones, saponins among others. They may also contain standard excipients in addition to the active ingredients. Exceptionally, in some countries herbal medicine may also contain by tradition, natural organic or inorganic active ingredients which are not of plant origin (WHO, 1996). Over 80% of people living in developing countries depend on herbal medicines as their immediate choice in the treatment of diseases showing its relevance and importance in Primary Health Care (Moody, 2007). In 1976, about a quarter of the prescription drugs dispensed by community pharmacy in the United States contained at least one active ingredient derived from plants (Farnsworth & Morries, 1976). Currently, dispensing herbs/active ingredients is on the increase as herbal medicine is becoming more popular (Ekor, 2013). The WHO estimate of population that has used some
form of alternative or complementary medicine including Ayurvedic, homeopathic, naturopathic, traditional oriental and Native American Indian medicine in developing countries is between 70 and 80 % (Oreagba & Oshikoya, 2011).

Herbal medicines have been recognised by the WHO as the most popular form of traditional medicine, and thus, highly lucrative in the international medicine market. Annual revenues in Western Europe were estimated at US$ 5 billion in 2003-2004, in China the revenue was estimated at US$ 14 billion in 2005, and in Brazil it was US$ 160 million in 2007 (Oreagba & Oshikoya, 2011). The increasing widespread use of Traditional medicine has prompted the WHO to promote its integration into the national health care systems of some countries and to encourage the development of national policy and regulations as essential indicators of the level of integration of such medicine into a national health care system (Oreagba & Oshikoya, 2011). Also in Nigeria, approximately 205 medicinal plant species are prevalent in nature (FEPA, 1992). Traditional medicine in Nigeria is as old as the people and it is growing in importance and this has made the Federal Government of Nigeria to formulate a traditional medicine policy and to establish a Traditional Medicine Council to regulate practice and encourage research in five core areas (herbal medicine, bone setting, mental health, traditional birth attendance and sale of traditional medicine ingredients (Chesa, 2006). Herbal medicines are by far less concentrated, less toxic and are used in much lower doses than orthodox medicine which in its concentrated drug formulations are designed to target and reverse specific pathologies in the minimum of time (Osemene, 2011; Ohuabunwa, 1998; Moody, 2007). The plants used in herbal medicine have been found to carry their own in-built safety mechanisms. Furthermore, they are ideal tools to restore damaged physiological processes since they consist of a multiplicity of chemical components which act synergistically to make active constituents bio available or to buffer the otherwise potentially powerful active principles thus preventing harmful side effects (Osemene, 2011, Moody, 2007). Herbal medicine has its root in prehistory making every bit as ancient tradition as farming or cooking. In the Graeco-Roman era, Hippocrates (father of medicine), Theophrastus (father of Botany), Galen (originator of pharmaceutical galenicals) and Dioscorides were all herbalists (Osemene, 2011; Moody, 2007). Globally, people developed unique indigenous healing traditions adapted and defined by their culture, beliefs and environment, which satisfied the health needs of their communities over centuries (Oreagba & Oshikoya, 2011). Previous studies of herbal medicine use in Nigeria were focused on adults with various forms of chronic illnesses (Danesi & Adetunji, 1994; Amira & Okubadejo, 2007; Ogbera et al., 2010), pregnant women (Fakeye et al., 2009) and children with chronic illnesses (Oshikoya et al., 2008) and among a general population without chronic health conditions. No study has ever been evaluated in Nigeria or other African countries on younger population to know if there is transfer of knowledge of herbal medicine from the older population to the younger ones of age range between 14 and 18 years. This study was therefore aimed to assess the extent of use and the general knowledge, benefits and safety of herbal medicines among Senior Secondary School Students resident in Amassoma in the Niger Delta region of Nigeria.

2. Methodology

Description of Study Area

Amassoma is the head quarter of Ogboin clan as well as Ogboin-North Rural Development Authority in the Southern Ijaw Local Government Area of Bayelsa State (Figure 1). It is the host community to the Niger Delta University, Wilberforce Island Bayelsa. It is located about 40 km to the South of Yenagoa; the State capital. It is on an altitude of 512 above sea level, bounded in the North by River Nun, West by Otuan, East by Toru Ebeni and the South by Ogobiri. It is the biggest town in Southern Ijaw Local Government Area. The area has a coastline of approximately 60 km on the Bight of Bonny. It has an area of 2,682 km² and a population of 319,413 (Federal Government of Nigeria, 2007)
The study covered the only two Secondary Schools having Senior (SS 1 to SS 3) classes in Amassoma. Students in the Senior Secondary classes were involved. Permission was sought from the School management. A total of Two hundred and twenty-eight (228) students were present in these classes. Only 164 (72%) students responded and finally selected for the study through a purposive and convenience sampling process. Furthermore, semi structured questionnaires/interviews amidst informal conversation on the respondents whose opinions were sought on their knowledge of herbal medicine. The questionnaires had two components: Demography and Indigenous knowledge on herbal medicines. The participants were allowed to give the vernacular names of the plants while some were identified at site. The results of the pre-tested questionnaires were used to make necessary modifications and corrections on the questionnaires and interview guides. Data were analysed using descriptive statistics such as frequency and percentages.

3. Results and Discussion

Demography

Males were more in all the three arms of the classes with 54% except in S. S. S 2 with a higher number of females (54%). It has been reported that Bayelsa state is among the States in Nigeria with low girl child education probably due to under age child bearing and poverty (Punch Newspaper, Oct., 2013). Age range of 14 – 18 years was the highest in terms of the number of respondents (86% of students in this category) and the majority (82%) speaks Ijaw language apart from English which is the medium of communication in Nigerian schools (Table 1).

| Table 1. Demographical Data of the study Population |
|-----------------------------------------------|
| SS1 | SS2 | SS3 | TOTAL |
|---|---|---|----|
| GENDER | | | |
| MALE | 50 | 19 | 20 | 89 (54 %) |
| FEMALE | 35 | 21 | 19 | 75 (46 %) |
| AGE | | | |
| 9 TO 13 | 7 | 1 | 1 | 9 (6 %) |
| 14 TO 18 | 75 | 37 | 30 | 142 (86 %) |
| > 19 | 3 | 2 | 8 | 13 (8 %) |
| LANGUAGE | | | |
| IJAW | 69 | 36 | 30 | 135 (82.2 %) |
| YORUBA | 0 | 0 | 2 | 2 (1.2 %) |
| IBO | 5 | 0 | 0 | 5 (3.1 %) |
| HAUSA | 0 | 0 | 0 | 0 (0 %) |
| OTHERS | 2 | 1 | 2 | 5 (3.1 %) |
| COMBINATION | 9 | 3 | 5 | 17 (10.4 %) |
3.1 Contact With Herbs

Nearly all the respondents (97%) have had contact with herbs. The highest medium of contact was through usage (approximately 40%), 25% acquired knowledge on herbs through their parents. This is different from a report in which 80% acquired their knowledge through parents among Secondary and Grammar School students in Slovenia (Strgar et al., 2013). While 37% had contact through a combination of usage, parents, Teachers and media, only less than 1% had it through their teachers/literature. This agrees with the case in Slovenia in which it was found that little or nothing on the subject was learnt in school (Strgar et al., 2013). Their stimulation of interest was majorly from their parents (53%), followed by their Grand parents (22%). Others were through combinations of parents, grandparents, herbalists and other relations. This showed that parents are still eager to transfer their indigenous knowledge to their children. Twenty percent of respondents believed that their interest in herbal medicine is high, while majority (52%) showed a middle rating in their interest and 27% showed low interest. Approximately 90% has used herbal medicines at one time or the other whether once, a few times, frequently or occasionally, while only 10% have never taken it before. Out of the 90%, about 26% takes it frequently. Out of these 90% users, approximately 70% are highly satisfied with the effectiveness of herbal medicine. The remaining had a low satisfaction (31%) (Table 2).

Table 2. Contact of Respondents to herbal medicines

| CONTACT WITH HERBS | SS 1 | SS 2 | SS 3 | TOTAL   |
|--------------------|------|------|------|---------|
| YES                | 80   | 40   | 39   | 159 (97%) |
| NO                 | 5    | 0    | 0    | 5 (3.1%)  |

| MEDIUM OF CONTACT | USAGE | PARENTS | TEACHERS/LITERATURE | MEDIA | OTHERS | COMBINATION | TOTAL   |
|-------------------|-------|---------|---------------------|-------|--------|-------------|---------|
|                   | 23    | 10      | 1                   | 11    | 3      | 27          | 63 (39.6%) |
| PARENTS           | 13    | 5       | 0                   | 3      | 1      | 10          | 25 (25.2%)  |
| MEDIA             | 27    | 10      | 0                   | 14     | 4      | 30          | 37 (23.3%)  |

| STIMULATION OF INTEREST | PARENTS | GRAND PARENTS | RELATIONS | HERBALIST | OTHERS | COMBINATION | TOTAL   |
|-------------------------|---------|---------------|-----------|-----------|--------|-------------|---------|
|                         | 48      | 17            | 4         | 0         | 6      | 10          | 87 (53%) |
| COMBINATION             | 19      | 9             | 3         | 0         | 6      | 3           | 36 (22%) |
|                         | 20      | 4             | 2         | 1         | 6      | 1           | 35 (20.1%) |
|                         | 0       | 0             | 0         | 0         | 0      | 0           | 0 (0%)   |

| NO OF TIMES HERBS HAVE BEEN TAKEN | ONCE | FEW | FREQUENT | TOTAL |
|----------------------------------|------|-----|----------|-------|
|                                  | 22   | 16  | 18       | 42 (26.4%) |
|                                  | 2    | 13  | 18       | 31 (19.5%) |
|                                  | 7    | 22  | 6        | 51 (32.1%) |
3.2 Knowledge of Medicinal Plants

Grandparents were the highest (46%) custodian of knowledge on medicinal plants in their family followed by their parents with about 40%. Out of the latter, mothers had more knowledge on medicinal plants than fathers with approximately 60%. Women have been recognized as users and custodians of plant biodiversity. In countries like Bolivia, Colombia, Peru, Viet Nam, Indonesia and India, they are responsible for the selection, improvement and storage of seeds and management. Women from sub-Saharan Africa grow over 120 different plant varieties in small areas alongside cash crops (Deda & Rubian, 2004). In a study in Sierra Leone, women could name 31 uses of trees on fallow land and in the forest, while men named eight different uses (Aguilar, 2004). Women have a unique relationship with biodiversity across the globe; they predominate as wild plant gatherers, home gardeners, plant domesticators, herbalists and seed custodians.

Majority (55%) would prefer modern medicine to herbal medicines (39%), while 6% would prefer to opt for both since from their perception, they work synergistically. Out of the 39% that preferred herbal medicine, 61% of them would prefer herbal medicine for its effectiveness, affordability, accessibility and safety. Only 43% would like to attend a course on herbal medicine if there was an opportunity as against about 94% in the case of Slovenia probably because they think herbal medicine is enmeshed in esoterism or does not yet enjoy official recognition by Government. Thirty-one percent (31%) gave a positive response that they would like to practise herbal medicine. A previous report has shown that the younger generation does not seem to have much trust in the traditional medicine system which may be attributed to increasing use of allelopathic medicines which are readily available and considered potent. Up to 85% of respondents had knowledge of medicinal plants and about 95% of these medicinal plants mentioned grow or are cultivated around the home. Approximately 90% could identify the common plants growing around them, 83.5% of them can prepare them for use and up to 90% of these has at one time or the other been involved in self-treatment or prescription (Table 3).

Table 3. Knowledge of herbal medicine by the Respondents

| BEST KNOWLEDGE OF MEDICINAL PLANTS IN THE FAMILY  | SS 1 | SS 2 | SS 3 | TOTAL |
|-----------------------------------------------|-----|-----|-----|-------|
| MOTHER                                        | 17  | 10  | 11  | 38 (24 %) |
| FATHER                                        | 11  | 4   | 10  | 25 (15.7 %) |
| GRAND PARENTS                                 | 45  | 16  | 12  | 73 (46 %) |
| OTHERS                                        | 8   | 6   | 3   | 17 (10.7 %) |
| COMBINATION                                   | 1   | 3   | 0   | 4 (2.5 %) |
| NONE                                          | 0   | 0   | 3   | 3 (1.9 %) |
| PREFERENCE OF MEDICINE                        |     |     |     |       |
| HERBAL MEDICINE                               | 35  | 16  | 13  | 64 (39 %) |
| MODERN MEDICINE                               | 46  | 21  | 23  | 90 (55 %) |
| EQUAL                                         | 4   | 3   | 2   | 9 (5.5 %) |
| NONE                                          | 0   | 0   | 1   | 1 (0.6 %) |
| REASON                                        |     |     |     |       |
| HERBAL MEDICINE                               | 12  | 8   | 7   | 27 (42.2 %) |
| Item                              | Yes | No  | May | Total          |
|----------------------------------|-----|-----|-----|----------------|
| AFFORDABLE                       | 2   | 1   | 0   | 3 (4.7 %)      |
| ACCESSIBLE                       | 4   | 1   | 1   | 6 (9.4 %)      |
| NATURAL AND SAFE                 | 5   | 2   | 0   | 7 (4.3 %)      |
| COMBINATION                      | 12  | 4   | 5   | 21 (32.8 %)    |
| MODERN                           | 27  | 11  | 10  | 48 (53.3 %)    |
| EFFECTIVE                        | 4   | 2   | 1   | 7 (7.8 %)      |
| SUBJECTED TO SCIENTIFIC RESEARCH | 5   | 2   | 5   | 12 (13.3 %)    |
| PRESENTABLE                      | 3   | 2   | 1   | 6 (6.7 %)      |
| CIVILIZATION                     | 1   | 0   | 0   | 1 (1.1 %)      |
| SAFE                             | 0   | 1   | 1   | 2 (2.1 %)      |
| COMBINATION                      | 6   | 3   | 5   | 14 (15.6 %)    |
| EQUAL                            | 4   | 3   | 2   | 9              |
| BOTH CAN WORK TOGETHER           |     |     |     |                |
| NONE                             | 0   | 0   | 1   | 1              |
| RELIGIOUS BELIEF                 |     |     |     |                |
| COURSE ON HERBAL MEDICINE        |     |     |     |                |
| YES                              | 35  | 20  | 15  | 70 (42.7 %)    |
| NO                               | 50  | 20  | 24  | 94 (57.3 %)    |
| PRACTICE OF TRADITIONAL MEDICINE |     |     |     |                |
| YES                              | 25  | 15  | 10  | 50 (30.5 %)    |
| NO                               | 60  | 25  | 29  | 114 (69.5 %)   |
| KNOWLEDGE OF MEDICINAL PLANTS    |     |     |     |                |
| YES                              | 71  | 35  | 33  | 139 (84.8 %)   |
| NO                               | 14  | 6   | 5   | 25 (15.2 %)    |
| ARE THEY CULTIVATED AROUND THE HOME |     |     |     |                |
| YES                              | 63  | 35  | 34  | 132 (95 %)     |
| NO                               | 6   | 0   | 1   | 7 (5 %)        |
| PLANT IDENTIFICATION             |     |     |     |                |
| YES                              | 55  | 35  | 34  | 124 (89.2 %)   |
| NO                               | 12  | 0   | 3   | 15 (10.8 %)    |
| PREPARATION OF HERBAL MEDICINE   |     |     |     |                |
| YES                              | 53  | 31  | 32  | 116 (83.5 %)   |
| NO                               | 14  | 4   | 5   | 23 (16.5 %)    |
| SELF TREATMENT/PRESCRIPTION      |     |     |     |                |
| YES                              | 48  | 30  | 26  | 104 (90 %)     |
| NO                               | 2   | 5   | 5   | 12 (10 %)      |

### 3.3 Plant Species

Fever was the main ailment treated with *Vernonia amygdalina*, *Carica papaya* and *Citrus x aurantifolia* while Eye ailment was for *Ocimum gratissimum* and *Telfairia occidentalis* is for boosting blood (Table 4). When the plant species were categorized into 29 families, it was observed that the most cited one was Asteraceae (10.26%), followed by the family Euphorbiaceae (7.69%) (Table 5). These two families have also been reported to be
predominant in an ethnobotanical inventories carried out in some Southern parts of Nigeria (Uzodimma, 2013; Obata & Aigbokhan, 2012).

Table 4. Medicinal plants mentioned by the students and their uses

| Plant Family | Common names | Main disease |
|--------------|--------------|--------------|
| 1 Acalypha wikesiana Muell Arg | Acalypha | Skin infection |
| 2 Aframomum melegueta K. Schum | Alligator pepper | Wound |
| 3 Ageratum conyzoides L. | Goat weed | Eye |
| 4 Allium cepa L. | Onion | Fainting |
| 5 Aloe vera (L.) Burn.f | Aloe vera | Eye |
| 6 Ananas comosus Merr. | Pineapple | Measles |
| 7 Azadirachta indica A. Juss | Neem | Fever |
| 8 Bryophyllum pinnatum (Lam) Oken | Never die | Cough |
| 9 Capsicum frutescens L. | Pepper | Wound |
| 10 Carica papaya L. | Pawpaw | Fever |
| 11 Chromolaena odorata (L.) King & H.E Robins | Christmas bush | Bleeding |
| 12 Citrus x aurantifolia Burn.f. | Lime | Fever |
| 13 Citrus x sinensis Osbeck | Orange | Energy/appetite |
| 14 Cola nitida (Vent.) Schott &Endl. | Sterculiaceae | Kola nut | Skin infection |
| 15 Corchorus olitorius L. | Jute leaf | Skin beauty |
| 16 Costus afer Ker Gawl | Monkey sugar cane | Chicken pox |
| 17 Cymbopogon citratus DC Stapf. | Lemon grass | Fever |
| 18 Elaeis guineensis Jacq. | Palm kernel | Fever |
| 19 Ficus exasperata L. | Fig tree | Blood |
| 20 Garcinia kola Heckel | Bitter cola | Cough |
| 21 Helianthus anuus L | sun flower | Bleeding |
| 22 Hibiscus esculentus (L.) Moench | Malvaceae | Okro | Bite |
| 23 Ipomea batatas L. | Convolvulaceae | Potato | Pile |
| 24 Jatropha tanjoensis Ellis &Saroja | Euphorbiaceae | Hospital too far | Blood |
| 25 Solanum lycopersicum L | Solanaceae | Tomato | Blood |
| 26 Mangifera indica L. | Anacardiaceae | Mango | Fever |
| 27 Manihot esculenta Crantz | Euphorbiaceae | Cassava | Bite/inflammation |
| 28 Moringa oleifera L. | Moringaceae | Moringa | Eye |
| 29 Musa paradisiaca L. | Musaceae | Plantain | Chicken pox |
| 30 Ocimum gratissimum L. | Lamiaceae | Scent leaf | Eye |
| 31 Pennisetum purpureum L | Poaceae | Elephant grass | Fever |
| 32 Persea americana Mill | Lauraceae | Avocadrop ear | Arthritis |
| 33 Phyllanthus amarus Schum. & Thonn. | Phyllanthaceae | Phyllanthus | Labour induction |
| 34 Psidium guajava L. | Rutaceae | Guava | Stomach ache |
| 35 Talinum triangulare (Jacq.) Willd. | Portulacaceae | Water leaf | Pain |
| 36 Telfairia occidentalis Hook. F | Cucurbitaceae | Fluted pumpkin | Blood |
| 37 Tetrapleura tetraptera Taub. | Leguminosae-Mimosaceae | Tetrapleura | Ulcer |

Table 5. Medicinal Plant families mentioned by the students

| Families                  | Occurrence | % Occurrence |
|---------------------------|------------|--------------|
| Aliaceae                  | 1          | 2.56         |
| Aloaceae                  | 1          | 2.56         |
| Anarcadaceae              | 1          | 2.56         |
| Annonaceae                | 1          | 2.56         |
| Areceae                   | 1          | 2.56         |
| Asteraceae                | 4          | 10.26        |
| Bromeliaceae              | 1          | 2.56         |
| Caricaceae                | 1          | 2.56         |
| Convovulaceae             | 1          | 2.56         |
| Costaceae                 | 1          | 2.56         |
| Crassulaceae              | 1          | 2.56         |
| Cucurbitaceae             | 1          | 2.56         |
| Euphorbiaceae             | 3          | 7.69         |
| Gutiferae                 | 1          | 2.56         |
| Lamiaceae                 | 1          | 2.56         |
| Lauraceae                 | 1          | 2.56         |
| Leguminosae-Mimosaceae    | 1          | 2.56         |
| Malvaceae                 | 1          | 2.56         |
| Meliaceae                 | 1          | 2.56         |
| Moraceae                  | 1          | 2.56         |
| Moringaceae               | 1          | 2.56         |
| Musaceae                  | 1          | 2.56         |
| Myrtaceae                 | 1          | 2.56         |
| Poaceae                   | 2          | 5.13         |
| Portulacaceae             | 1          | 2.56         |
| Rutaceae                  | 2          | 5.13         |
| Solanaceae                | 1          | 2.56         |
| Sterculiaceae             | 1          | 2.56         |
| Tiliaceae                 | 1          | 2.56         |
| Zingiberaceae             | 1          | 2.56         |

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3.4 Disease Category

Fever was the most frequently mentioned singular disease with 43% citation having *Vernonia amygdalina* as the most cited plant species for it (37%). This agrees with the findings from Portharcourt metropolis in the Niger Delta Region, in which most of the plants cited were used to treat malaria fever, underlying the importance of this disease in the region (Nwazuoma & Dappa, 2013). Malaria has been reported as the world’s most important parasitic disease. Nearly half of her population is exposed to malaria. An estimate of 3.3 billion people was at risk in 2011 with Sub-saharan Africa having the highest risk (Kasali et al., 2014; Ibrahim et al., 2012; Adebayo & Kretti, 2011). It is endemic in Nigeria, accounting for a quarter of all cases in the Sub-saharan Africa (Omosun et al., 2013), with about 97% of the population at risk (FMOH, 2009). It also accounted for nearly 110 million clinically diagnosed cases of fever yearly and an estimate of annual infant and children under five mortality of about 25% and 30% respectively (FMOH, 2009). It is also responsible for an estimated maternal mortality of 11%. Apart from the direct health impact, the annual social and economic burden in form of treatment cost, prevention cost and loss of man hours, is estimated to be about 132 billion naira (Kunle et al., 2013). The Bayelsa State Ministry of Health has also identified malaria as the lead cause of 210 deaths recorded in the State in 2011. Out of the 210 cases of deaths that occurred in about 35 different diseases under the public health sector surveillance, malaria was said to have led the pack with 102 deaths in 2011 (Daily Trust, Feb. 28, 2012). Niger Delta Region experiences the highest amounts of rain fall in Nigeria receiving over 4000 mm (157.5 in) annually thus the terrain is characterized by marshy areas which encourage the breeding of mosquitoes. Next to fever in rank was eye ailment (9.1%), the most cited plant species for it was * Ocimum gratissimum* (10.8%). These were followed by Blood diseases (6.6%), Stomach ache (7%), Bleeding (4%) with the most cited plant species as *Telfairia occidentalis* (8.7%), *Citrus aurantifolia* (3.5%) and *Vernonia amygdalina* (6.9%) respectively (Table 6, Appendices 1a, b, and c). When the diseases were categorized, fever ranked highest among the categories of diseases cited by the respondents (45%), 13.5% of plant species were mentioned for this category. Next to it was haematological conditions which had 13% citation and 13.5% plant species mentioned for it. Others were gastrointestinal disorders (10.6%), ophthalmology (9.4%) and musculoskeletal ailments (6.4%) with 15 %, 6.8% and 13.5% number of species of plants cited respectively (Table 7).

Table 6. Category of ailments and most cited medicinal plants for treatment

| s/n | Disease                  | Citation | % citation of disease | most cited plant(s)          | citation of plant for Disease | % citation of plant for Disease |
|-----|--------------------------|----------|-----------------------|------------------------------|-------------------------------|--------------------------------|
| 1   | Acne                     | 2        | 0.4                   | *Citrus aurantifolia*        | 2                             | 0.9                            |
| 2   | Appetite                 | 2        | 0.4                   | *Citrus sinensis*            | 1                             | 0.4                            |
|     |                          |          |                       | *Capsicum frutescens*        |                               |                                |
| 3   | Arthritis                | 3        | 0.6                   | *Ocimum gratissimum*         | 1                             | 0.4                            |
|     |                          |          |                       | *Persea americana*           |                               |                                |
| 4   | Asthma                   | 1        | 0.2                   | *Allium cepa*                | 1                             | 0.4                            |
| 5   | Bleeding                 | 19       | 4.0                   | *Vernonia amygdalina*        | 16                            | 6.9                            |
| 6   | Blood                    | 31       | 6.6                   | *Telfairia occidentalis*     | 20                            | 8.7                            |
| 7   | Body tonic               | 2        | 0.4                   | *Ocimum gratissimum*         | 1                             | 0.4                            |
| 8   | Catarrh                  | 6        | 1.3                   | *Ocimum gratissimum*         | 3                             | 1.3                            |
| 9   | Chicken pox              | 3        | 0.6                   | *Musa paradisiaca*           | 1                             | 0.4                            |
|     |                          |          |                       | *Azadirachta indica*         | 1                             | 0.4                            |
|     |                          |          |                       | *Costus afer*                | 1                             | 0.4                            |
| 10  | Conjunctivitis           | 1        | 0.2                   | *Musa paradisiaca*           | 1                             | 0.4                            |
| 11  | Cough                    | 11       | 2.3                   | *Garcinia kola*              | 2                             | 0.9                            |
| 12  | Diabetes                 | 4        | 0.9                   | *Vernonia amygdalina*        | 3                             | 1.3                            |
| 13  | Diarrhoea                | 3        | 0.6                   | *Vernonia amygdalina*        | 1                             | 0.4                            |
| No. | Condition                 | Count | Frequency |
|-----|---------------------------|-------|-----------|
| 14  | Dislocation               | 1     | 0.2       |
| 15  | Dry throat                | 2     | 0.4       |
| 16  | Ear infection             | 2     | 0.4       |
| 17  | Eczema                    | 4     | 0.9       |
| 18  | Energy                    | 5     | 1.1       |
| 19  | Eye                       | 43    | 9.1       |
| 20  | Fainting                  | 1     | 0.2       |
| 21  | Headache                  | 9     | 1.9       |
| 22  | Hernia                    | 1     | 0.2       |
| 23  | High Blood Pressure       | 3     | 0.6       |
| 24  | Inflammation              | 4     | 0.9       |
| 25  | Labour induction          | 1     | 0.2       |
| 26  | Malaria                   | 202   | 43        |
| 27  | Massaging                 | 1     | 0.2       |
| 28  | Measles                   | 6     | 1.3       |
| 29  | Menstrual pain            | 1     | 0.2       |
| 30  | Navel healing             | 1     | 0.2       |
| 31  | Pain                      | 11    | 2.3       |
| 32  | Pile                      | 5     | 1.1       |
| 33  | Ringworm                  | 1     | 0.2       |
| 34  | Skin beauty               | 2     | 0.4       |
| 35  | Skin infection            | 11    | 2.3       |
| 36  | Snake/ scorpion Bite      | 4     | 0.9       |
| 37  | Stomach ache              | 33    | 7         |
| 38  | Stomach ulcer             | 6     | 1.3       |
| 39  | Typhoid                   | 11    | 2.3       |
| 40  | Weight control            | 3     | 0.6       |
| 41  | Worm expeller             | 1     | 0.2       |
| 42  | Wound                     | 6     | 1.3       |

Plant names:
- Ocimum gratissimum
- Capsicum frutescens
- Aframomum melegueta
- Bryophyllum pinnatum
- Telfairia occidentalis
- O. gratissimum
- Allium cepa
- Moringa oleifera
- Garcinia kola
- Ipomea batatas
- Elaeisis guineensis
- Tetrapeura tetraperta
- Vernonia amygdalina
- Citrus aurantifolia
- Manihot esculenta
- Carica papaya
- Manihot esculenta
- Hibiscus esculentus
- Hibiscus esculentus
- Cochrous olitorius
- Citrus aurantifolia
- Citrus aurantifolia
- Citrus aurantifolia
- Citrus aurantifolia

Frequency range: 0.2 to 10.8
Table 7. Categories of Prevalent diseases in the study area

| Disease category          | citation | % citation | Number of specie | % Number of specie |
|---------------------------|----------|------------|------------------|-------------------|
| 1 Cardiovascular diseases | 3        | 0.6        | 2                | 1.5               |
| 2 Dermatology             | 33       | 7          | 20               | 15                |
| 3 Fever                   | 213      | 45.3       | 18               | 13.5              |
| 4 Gastrointestinal tract  | 50       | 10.6       | 20               | 15                |
| 5 Haematology             | 61       | 13         | 18               | 13.5              |
| 6 Metabolic diseases      | 12       | 2.6        | 9                | 6.8               |
| 7 Musculoskeletal         | 30       | 6.4        | 18               | 13.5              |
| 8 Obstetrics and Gynaecology | 3   | 0.6        | 2                | 1.5               |
| 9 Ophthalmology           | 44       | 9.4        | 9                | 6.8               |
| 10 Respiratory /Ear Nose & throat | 22   | 4.7        | 15               | 11.3              |
| 11 Structural diseases    | 2        | 0.4        | 2                | 1.5               |
|                           |          |            | 473              | 133               |

3.5 Plant’s Habits and Plant Parts Used As Medicines

Approximately 33% of the herbal medicines mentioned were from shrub, 30% were obtained from trees, 27.5% from herbs while 10% were shared equally between grass and climbers (Tables 8 and Figure 2). Majority (84%) of the herbal medicines mentioned were obtained from leaf while root produced the least (0.2%) (Figure 3). The use of leaves could be justified by the abundance of chemical groups they contain. In fact, leaves are known as the main synthesis site of secondary metabolites in plants and are the most commonly used plant parts by traditional medicine practitioners (Katemo et al., 2012; Lavergne & Vera, 1998; Idowu et al., 2010; Pousset, 1989; Moswa, 2005). This also constitutes an advantage as harvesting leaves on a sustainable manner ensures continuity of the plant.

Table 8. Plant habits

| Medicinal plants                      | Family       | Habits       |
|---------------------------------------|--------------|--------------|
| *Acalypha wikesiana* Muell Arg        | Euphorbiaceae| Shrub        |
| *Aframomum melegueta* K. Schum        | Zingiberaceae| Herb        |
| *Ageratum conyzoides* L.              | Asteraceae   | Shrub        |
| *Allium cepa* L.                      | Aliaceae     | Herb        |
| *Aloe vera* (L.) Burm.f               | Aloaceae     | Shrub        |
| *Ananas comosus* Merr.                | Bromeliaceae | Herb        |
| *Azadirachta indica* A. Juss          | Meliaceae    | Shrub        |
| *Bryophyllum pinnatum* (Lam) Oken     | Crassulaceae | Herb        |
| *Capsicum frutescens* L.              | Solanaceae   | Shrub        |
| *carica papaya* L.                    | Caricaceae   | Tree        |
| *Chromolaena odorata* (L.) King & H.E Robins | Asteraceae | Shrub        |
| *Citrus aurantifolia* Burn.f          | Myrtaceae    | Tree        |
| *Citrus sinensis* Osbeck              | Rutaceae     | Tree        |
| *Cola nitida* (Vent.) Schott &Endl.   | Sterculiaceae| Tree        |
| *Corchorus olitorius* L.              | Tiliaceae    | Herb        |
| *Costus afer* Ker Gawl                | Costaceae    | Shrub        |
| *Cymbopogon citratus* DC Stapf.       | Poaceae      | Herb/Grass   |
| Scientific Name               | Family           | Habit     |
|------------------------------|------------------|-----------|
| Elaeis guineensis Jacq.      | Arecales         | Tree      |
| Ficus exasperata L.          | Moraceae         | Tree      |
| Ficus exasperata L.          | Moraceae         | Tree      |
| Garcinia kola Heckel         | Guttiferae       | Tree      |
| Hibiscus esculentus (L.) Moench | Malvaceae     | Herb      |
| Ipomea batatas L.            | Convolvulaceae   | Climber   |
| Jatropha tanjorensis Ellis & Saroja | Euphorbiaceae  | Shrub     |
| Solanum lycopersicum L.      | Solanaceae       | Herb      |
| Mangifera indica L.          | Anarcardiaceae   | Tree      |
| Manihot esculenta Crantz     | Euphorbiaceae    | Shrub     |
| Moringa oleifera L.          | Moringaceae      | Tree      |
| Musa paradisiaca L.          | Musaceae         | Shrub     |
| Ocimum gratissimum L.        | Lamiaceae        | Shrub     |
| Pennisetum purpureum L.      | Poaceae          | Herb/Grass|
| Persea americana Mill        | Lauraceae        | Tree      |
| Phyllanthus amarus Schum. & Thonn. | Euphorbiaceae | Herb     |
| Psidium guajava L.           | Rutaceae         | Tree      |
| Talinum triangulare (Jacq.) Willd. | Portulacaceae | Herb     |
| Telfairia occidentalis Hook. F | Cucurbitaceae   | Climber   |
| Tetrapleura tetrapetra Taub. | Leguminosae-Mimosaceae | Tree   |
| Uvaria chamae P. Beauv.      | Anonaceae        | Shrub     |
| Vernonia amygdalina Delile   | Asteraceae       | Shrub     |

Figure 2. Different plant habits of the medicinal plants mentioned by the students
3.6 Similarity of Use

Plants like *Vernonia amygdalina*, *Ocimum gratissimum*, *Carica papaya*, *Mangifera indica*, *Citrus x aurantifolia* and *Azadirachta indica* which were mentioned in this study for fever have also been reported in the literature for use as such (Ezekwesili, 2004; Ige, 2011; Challand & Willcox; 2009). However, the use of *Vernonia amygdalina* which was the most cited for fever is not very common in most studies in Nigeria (Dike et al., 2012; Obata & Aigbokhan, 2012). Plants like *Mangifera indica* and *Azadirachta indica* are not commonly available in the Niger Delta as in the other parts of Nigeria; this may be the reason for their being less mentioned. Most of the leaves of *Azadirachta indica* being used for the treatment of malaria are obtained from the markets. Majority of these students have not seen the cultivated tree before.

3.7 Miscellaneous Sources of Medicines

A few respondents in addition to various plant species mentioned, cited oil from snakes, raw cray fish, raw eggs and male lizards as sources of medicines. Traditional medicines are diverse health practices, approaches, knowledge and beliefs that incorporate animal in addition to plants (Oreagba & Oshikoya, 2011).

3.8 Mode of Preparation of Recipes

Water is the most used solvent for the preparation of the recipes (Table 9). This confirms the reports of several other authors (Kasali, 2014; Dibong et al., 2011; Saoud et al., 2010). In fact, water is the cheapest and the most available solvent that can dissolve a high number of metabolites and high temperature permits a rapid extraction of active ingredients. However, some of these metabolites can be degraded by heat. Salts were added occasionally probably as a preservative especially when the solvent of preparation was water. Illicit gin was also sometimes used and in this case salt would be unnecessary.
### Table 9. Method of Preparation of Plants

| Plant          | Uses           | Method of Preparation                        | Mode of application/Dosage                                      |
|---------------|---------------|----------------------------------------------|-----------------------------------------------------------------|
| Bitter leaf   | Fever         | Crushed in water/chew leaf                   | Internal use; 1 shot x 3 till recovery                          |
|               | Wound         | Mix juice with soap                          | External; x 2 till recovery                                     |
|               | Eye           | Crushed and apply juice                      | External; 1 drop x 2 till recovery                               |
| Pawpaw        | Typhoid fever/malaria | Decoction                          | Internal; 1 shoxt 1 for a week/                                 |
| Mango         | Malaria fever | Decoction, salt may be added                  | Internal; 1 shot x 2 for 1 week                                   |
|               | Eye           | Crushed leaf and apply juice                 | External; apply as needed                                       |
|               | Wound         | Crushed and apply juice, salt/palm oil may be added |                                                      |
| Scent leaf    | Oral use      | Concoction                                   | Internal use; 1 shot x 3 till recovery                          |
|               | Catarrh       | Decoction                                   | Inhalation; at night as needed                                  |
|               | Eye           | Crushed leaf and apply juice                 | Eyes; 2 drops x 3                                                |
| Never die     | Stomach ache  | Chew                                         | Chew one or two leaves as needed                                |
| Lemon grass   | Fever         | Decoction                                   | 1shot twice for 1 week                                           |
| Moringa leaf  | Pain          | Infusion                                     | 1-2 teaspoonful thrice daily, 1-2 seeds thrice daily            |
| Fluted pumpkin| Blood         | Chew leaf, grind seed in water and infuse, beverage can be added | 1 glass as needed                                              |
|               | Malaria       | Extract juice in water/ add pawpaw leaf, mango stem bark/leaves and boil | External; Bathe as required inhale, I up twice daily orally     |
| Lime          | Weight loss   | mix juice with honey                         | Internal; One glass a day until result shows                    |
|               | Malaria       | Infuse leaf/fruit / lick                     | Internal; One glass a day until result shows                    |
| Alligator pepper| Cough  | Chew seed                                    | 1-2 seedsas needed                                              |
|               | Juice/skin    | Add salt to bitter leaf and extract juice and mix with juice | External; Apply twice daily                                  |
| Aloe vera     | Oral          | Boil leaf                                    | Internal; 1 tea cup with corn pap twice daily                    |
|               | Eye           | Squeeze juice                                | Instil into the eye once a day                                  |
|               | Labour induction | Chew                                     | Internal; Chew leaf once a day for two weeks                    |
| Kola nut      | Skin infection | Decoction of root                           | External; Bathe with it twice daily                             |
| Cassava       | Pain          | Chew leaf with gin                           | Internal; Chew twice daily                                      |
|               |              | Pound fresh leaf with ash                    | External; Rub twice daily                                       |
| Plantain      | Chicken pox/measles | Collect sap               | External; Apply twice daily on skin for measles/ 1 shot once daily orally |
| Guava         | Cough/ulcer   | Chew aerial part                            | Internal; chew 3-4 leaves as needed                              |
| Tetraptera    | Ulcer         | Mix with alligator pepper /Tincture          | Internal; 1 shot daily until relief                             |
| Orange        | Energy/appetite | Add leaf to lime / Decoction                | Internal; 1 shot thrice daily                                   |
| Jute leaf     | Skin beauty   | Decoction                                   | Internal; Drink like tea                                        |
| No. | Plant Name            | Condition | Treatment                                             | Route          |
|-----|----------------------|-----------|-------------------------------------------------------|----------------|
| 19  | Fig tree             | Blood     | Soak in water                                         | Internal; Drink like tea |
| 20  | Acalypha             | Skin infection | Decoction                               | Internal; 1 spoonful twice daily/ External; bathe with it |
| 21  | Neem                 | Malaria   | Add scent leaf, bitter leaf and lime/Tincture         | Internal; 1 shot thrice daily until relief |
| 22  | Christmas bush      | Bleeding  | Squeeze leaf                                          | External; Apply juice on affected part |
| 23  | Palm kernel          | Fever     | Extract oil from seed                                 | External; Apply/rub at night |
| 24  | Avocado pear         | Arthritis | Infusion/honey may be added                           | External; 1 glass once a day until result shows Internal; 1 shot twice daily/ |
| 25  | Pepper               | Fever/wound | Decoction/pound the seed                             | External: apply pounded seed twice daily |
| 26  | Sunflower            | Bleeding  | Squeeze juice                                         | External; Apply as needed Internal; 1 teaspoonful juice twice a day |
| 27  | Never die            | Cough     | Heat the leaf and extract juice                       | External; apply to the skin twice a day/ massage |
| 28  | Male lizard          | Cough     | Concoction                                            | Internal; Take once |
| 29  | Snake                | Skin rashes | Extract oil                                          | External; Rub twice daily |
| 30  | Elephant grass       | Fever     | Decoction                                             | Internal; 1 shot twice daily |
| 31  | Potato               | Measles   | Decoction                                             | Internal; 1 spoonful thrice daily |
| 32  | Bush pepper          | Skin infection | Chew seed                   | Internal; Chew 1-2 seeds daily |
| 33  | Bitter cola          | Cough     | Chew and drink illicit gin                            | Internal; 1 – 2 seed twice daily |
| 34  | Tomato               | Blood     | Add to ugu juice                                      | Internal; 1 cup as required |
| 35  | Onion                | Fainting  | Extract juice/ extract leaf with beverage             | Eye; Apply to the eye Internal; 1 cup as needed in asthma |
| 36  | Water leaf           | Blood     | Extract in water                                      | Internal; 1 shot thrice daily |
| 37  | Cray fish            | Blood     | Fresh                                                 | Eat fresh once daily |
| 38  | Goat weed            | Eye       | Squeeze                                               | Eye; Apply to the eye once daily |
| 39  | Okro                 | Bite/sting | Squeeze                                              | External; Apply to the affected area |
| 40  | Pineapple            | Measles   | Boil fruit peels                                      | External; Bathe with it until relief |
| 41  | Monkey sugar cane    | Chicken pox | Extract juice                                 | External; Apply to the skin Internal; 1 cup as needed |
| 42  | Fresh egg            | Blood     | Mix with beverage                                    | Internal; 1 teaspoonful twice daily Internal; 1 cup as needed |
| 43  | Hospital too far     | Blood     | Extract in water                                      | Internal; 2 glasses daily |
| 44  | Phyllanthus          | Labour induction | Extract in water                              | Internal; 1 cup as required |

4. Conclusion

There is the need to preserve the indigenous knowledge of herbal medicines; this can be done by inclusion of herbal medicine study in school’s curriculum. This inclusion will impart the indigenous knowledge in the pupils as they have an advantage of preserving the indigenous knowledge by carrying on the practice of traditional medicine to their old age. Through formal training, herbal medicine will be accorded more recognition and taken more seriously. This will increase awareness in the use of simple, harmless but useful herbs. It will also
encourage some of the pupils to study herbal medicine or related courses to promote herbal medicine in the country. Now that Nigeria is preparing to legalize herbal medicine to her conventional healthcare system, studying herbal medicine from SS 2 will strengthen the system of medicine which may be incorporated into the healthcare system of the country.

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Appendix

Appendix 1a: Cited plants and the diseases for which they are used

| Plant                        | Cough | body energy | pain | worm | acne | skin | ulcer | hernia | appetite | dyspepsia | dry | labour | chicken | massaging |
|------------------------------|-------|-------------|------|------|------|------|-------|--------|----------|-----------|-----|--------|----------|-----------|
| Vernonia amygdalina          |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Ocimum gratissimum           | 1     | 1           |      |      |      |      |       |        |          |           |     |        |          |           |
| Carica papaya                | 1     | 1           |      |      |      |      |       |        |          |           |     |        |          |           |
| Mangifera indica            |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Cymbopogon citratus         |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Pennisetum purpureum        |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Citrus x aurantifolia       | 2     | 1           | 2    |      |      |      |       |        |          |           |     |        |          |           |
| Psidium guajava             | 1     | 2           |      |      |      |      |       |        |          |           |     |        |          |           |
| Telfairia occidentalis      |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Aframomum melegueta         | 1     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Tetrapleura tetraperta      | 3     | 1           |      |      |      |      |       |        |          |           |     |        |          |           |
| Uvaria chamae               | 1     | 1           | 1    | 1    | 1    |      |       |        |          |           |     |        |          |           |
| Helianthus annus            |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Talinum triangulare         | 2     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Uvaria chamae               |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Acalypha wikesiana          |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Aloe vera                   | 1     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Azadirachta indica          |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Chromolaena odorata         |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Elaeis guineensis           |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Musa paradisiaca            |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Citrus x sinensis           | 1     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Corchorus olitorius         |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Ficus exasperate            |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Allium cepa                 |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Manihot esculenta           | 1     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Hibiscus esculentus         |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Ananas comosus              |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Costus afer                 |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Garcinia kola               | 2     |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Moringa oleifera           |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Bryophyllum pinnatum        | 1     | 2           |      |      |      |      |       |        |          |           |     |        |          |           |
| Ipomea batatas              |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Ageratum conyzoides         |       |             |      |      |      |      |       |        |          |           |     |        |          |           |
| Plant                        | menstrual | conjunct | asthma | fainting | bite | BP | eczema | ear | navel | skin | ring | pain | tinnitus | healing | rashes | worm |
|-----------------------------|-----------|----------|--------|----------|------|----|--------|-----|-------|------|------|------|-----------|---------|--------|------|
| Solanum lycopersicum        |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| Persea Americana           |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| Honey                      |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| male lizard                | 4         |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| cray fish                  |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| Snake                      |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| Cola nitida                |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| fresh egg                  |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| Jatropha tanjorensis       |           |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |
| phyllanthus amarus         | 2         |          |        |          |      |    |        |     |       |      |      |      |           |         |        |      |

Appendix 1b: Cited plants and the diseases for which they are used
Costus afer
Garcinia kola
Moringa oleifera
Bryophyllum pinnatum
Ipomea batatas
Ageratum conyzoides
Solanum lycopersicum
Persea Americana
Honey
male lizard
cray fish
Snake
Cola nitida
fresh egg
Jatropha tanjorensis
phyllanthus amarus

| Plant                          | fever | cattarh | blood | stomach bleed | inflammation | measles | eye | head | diarrhea | diab | clan | skin | weight | arthr | wound | typhoid | pile |
|-------------------------------|-------|---------|-------|---------------|--------------|---------|-----|------|----------|------|------|------|--------|-------|-------|---------|------|
| Vernonia amygdalina           | 85    | 3       | 1     | 4             | 16           | 1       | 3   | 7    | 2        | 1    | 3    | 2    | 1      | 1     | 1     | 1       | 1    |
| Ocimum gratissimum            | 17    | 2       | 7     |               |              | 25      | 7   | 1    | 1        |      | 1    | 5    | 1      | 1     | 1     | 1       | 1    |
| Carica papaya                 | 31    |         |       |               |              |         |      |      | 1        |      | 1    | 6    |        |       |       |         |      |
| Mangifera indica              | 15    |         |       |               |              |         |      |      | 1        |      |      |      |        |       |       |         |      |
| Cymbopogon citratus           | 18    | 1       | 1     |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Pennisetum purpureum          | 2     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Citrus x aurantifolia         | 16    | 11      | 1     |               |              |         |      |      |           |      |      | 1    | 1      | 1     |       |         |      |
| Psidium guajava               | 1     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Telfairia occidentalis        | 1     |         |       |               |              |         |      |      |           |      |      | 25   |        |       |       |         |      |
| Aframomum melegueta           | -     |         |       |               |              |         |      |      |           |      |      | 1    | 1      |       |       |         |      |
| Tetrapleura tetraptera        | -     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Uvaria chamae                 | 1     |         |       |               |              |         |      |      | 1        |      |      |      |        |       |       |         | 2    |
| Helianthus anua               | 2     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Talinum triangulare           | 1     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         |      |
| Uvaria chamae                 |       |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         | 1    |
| Acalypha wikesiana            | 1     |         |       |               |              |         |      |      |           |      |      |      |        |       |       |         | 2    |
| Aloe vera                     | 1     |         |       |               |              |         | 3   | 2    |           |      |      |      |        |       |       |         |      |
| Plant Name                  | Number of Occurrences | Country Code |
|----------------------------|-----------------------|--------------|
| Azadirachta indica         | 12                    | 3            |
| Chromolaena odorata        | 1                     |              |
| Corchorus olitorius        | 1                     |              |
| Ficus exasperate           | 1                     |              |
| Allium cepa                | 1                     |              |
| Manihot esculenta          | 1                     |              |
| Ficus exasperate           | 1                     |              |
| Allium cepa                | 1                     |              |
| Manihot esculenta          | 1 2                   |              |
| Hibiscus esculentus        | 1                     |              |
| Ananas comosus             | 1                     |              |
| Costus afer                | 1                     |              |
| Garcinia kola              | 1                     |              |
| Moringa oleifera           | 2 2 2                 | 2            |
| Bryophyllum pinnatum       | 3                     |              |
| Ipomea batatas             | 1                     | 4            |
| Ageratum conyzoides        | 1                     |              |
| Solanum lycopersicum       | 1                     |              |
| Persea Americana           | 1                     |              |
| Honey                      | 1                     |              |
| male lizard                |                       |              |
| cray fish                  | 1                     |              |
| Snake                      |                       |              |
| Cola nitida                | 1 1                   | 1            |
| fresh egg                  | 1                     |              |
| Jatropha tanjorensis       | 1                     |              |
| phyllanthus amarus         |                       |              |

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