Ethnobotanical Survey of Medicinal Plants in Ughelli North Local Government Area of Delta State

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Abstract

Indigenous medicinal plants form an important component of the natural wealth and culture of a geographical area, the study of plant began with tribal efforts to identify edible, medicinal and poisonous plants. Many of the traditional methods and general knowledge of medicinal plants are being lost to time as healers and tribal elder’s age and die. Scientists are searching for ways to preserve this knowledge and to test them against contemporary diseases. This is a descriptive study that investigated the use of medicinal plants for the treatment of diseases in Ughelli North Local Government Area of Delta state. Information was obtained through interviews using structured questionnaires. The collected data was analyzed using SPSS version 20. The analyzed data was presented in descriptive statistics using tables, charts and frequency and inferential statistic using chi-square and Analysis of Variance (ANOVA). Result showed that most of the respondents 270 (75.0%) were above age 30 years while most 250 (71.43%) were males and almost two-third 230 (65.71%) were married. Majority 150 (42.86%) attained O level as their high-level of education. Majority of the respondents (270) 75.0% affirmed to be aware of medicinal plant, 55% of the respondents got their information about medicinal plant from their parents, while 35% undergo training for usage of medicinal plant, 91.43% affirmed to use of medicinal plants very often. The most prevalent disease conditions treated with medicinal plants were malaria 92 (26.29%). Trees 44.59% were the most used forms of plants for the treatment of ailment and the most used of part of plant for the treatment of ailment were leaf 128 (36.84%). The main route of administration of medicinal plants is the mouth and decoction was the main method of preparation by 254 (72.46%). It is concluded that most persons in the rural area prefer the use of medicinal plants in the treatment of diseases for the reason of affordability, effectiveness, availability and accessibility of practitioners. It is recommended for this reasons or advantages, traditional medicine is useful to the health of the nation and should be integrated or co-recognized with modern or orthodox medicine practice and its operation should be re-evaluat-ed and standardized for optimal effects.

Keywords: Delta state; Ethnobotany; Medicinal plants; Ughelli

Introduction

The attempt by mankind to use plant products to cure diseases and relieve physical suffering is as old as creation [1]. Human have derived many uses and benefits from the plants indigenous to their locality and have resorted to nature, mainly plants for medicine and health sources [1]. The indigenous medicinal plants form an important component of the natural wealth and culture of a geographical area. The study of plant began with tribal efforts to identify edible, medicinal and poisonous plants making botany one of the oldest sciences, of all the species of plants studied only about 60 have been evaluated phyto-chemically [2]. Plants have been used as drugs for centuries, initially as traditional preparations [3]. The use of plant species as traditional medicines provides a real substitute to orthodox healthcare services for rural communities of the developing nations [4]. It has been estimated that around 80% of the population in developing countries depends on traditional medicines for primary health care system. These traditional medicines are cost-effective, safe and affordable [5]. Globally, approximately 85% of the traditional medicines used in primary healthcare are derived from plant species [6]. Therefore, medicinal plants are the indigenous heritage of global importance [7].

The utilization of plants and their resources for combating various ailments predates written history and they are still in use all over the world. The oldest written evidence of the usage of medicinal plants for the preparation of drugs has been found on a Sumerian clay slab from Nippur, which is believed to be approximately 5000 years old. The isolation of morphine from opium in the early 19th century served as a gate opener for many studies aimed at isolating active compounds from medicinal plants, and this breakthrough led to the isolation of other bioactive compounds, such as cocaine, codeine, digitoxin and quinine. Although pharmaceutical companies and Research and Development (R and D) organizations are placing increased interest in molecular modeling, combinatorial chemistry and other synthetic chemistry techniques, natural products, specifically medicinal plants, remain the source of new drugs, new drugs leads and new chemical entities [8].

In Africa alone, it is estimated that 70%-80% of people still prefer consulting traditional medical practitioners for health care. Numerous
drugs have entered into the international market through exploration of ethno pharmacology and traditional medicine with extensive uses of medicinal plants. It is estimated that 25% of prescription drugs contain active principles derived from higher plants [9,10]. Many of the traditional methods and general knowledge of medicinal flora is being lost to time. As healers and tribal elder’s age and die, their knowledge is dying with them. Scientists are searching for ways to preserve this knowledge and to test them against contemporary diseases. Fewer than 5% of tropical forest plant species have been examined for their chemical compounds and medicinal value. This left great potential for even more discovery, but also the potential for great loss as forests are felled around the globe and unstudied species are lost to extinction [11]. This study (Ethnobotanical survey of medicinal plants use in Ughelli North Local Government area, Delta State) is to identify and document medicinal plants use for the treatment of various ailments.

**Aim of Study**

Current study aimed at reviewing major ethnobotanical medicinal plants in Ughelli North Local Government Area of Delta State, Southern Nigeria. Specifically, study;

i. Investigated the frequency and usage of selected Medicinal Plants
ii. Ascertained the forms of plants used for treatment of diseases
iii. Evaluated the Routes of administration of selected ethnomedical medicinal plants

**Materials and Methods**

**Study design**

This is a descriptive cross-sectional study that investigated the use of medicinal plants for the treatment of diseases in Ughelli North Local Government Area of Delta state. Information was obtained through interviews using structured questionnaires. Field excursions with traditional healers and herbal medicine collectors were carried out.

**Study area**

Ughelli North is a Local Government Area of Delta State, Nigeria, with headquarter in the city of Ughelli. It has an area of 818 km² and a population of 321,028 at the 2006 census. The postal code of the area is 333. The local government shares boundaries with Ughelli south, Isoko south, Isoko north, Patani Ethiope east and Ndokwa west local government areas.

**Scope of study**

This study is focus on the awareness and use of medicinal plants in Ughelli North Local Government Area of Delta state.

**Study population**

The population of study consists of people who have knowledge of the medicinal plants, those above 15 years of age. This age bracket was chosen because the researcher wants responses from everyone who has knowledge of medicinal plants found in their environment. The Urhobos were chosen because they are one of major ethnic group in Delta State.

**Inclusion criteria**

Those with the knowledge of medicinal plants such as the herbal practitioners.

**Exclusion criteria**

Those without the knowledge of medicinal plants.

**Sample procedure/ size**

The sample size of this research consisted of various individuals with knowledge of medicinal plants in Ughelli North Local Government Area of Delta State. This sample size was chosen based on convenience sampling.

**Research instrument**

Questionnaire method was used for data collection among those with the knowledge of medicinal plants above 16 years of age. Structured survey questionnaire on the research topic was designed and administered to respondent.

**Method for data analysis**

The collected data was analyzed using SPSS version 20. The analyzed data was presented in descriptive statistics using tables, charts and frequency and inferential statistic using Chi-square and Analysis of Variance (ANOVA).

**Validity of instrument**

The questionnaire was submitted to the project supervisor with the objectives of the study and research question for review in form of clarity, appropriateness of the language, introduction and expression to the respondents. The researcher made necessary modifications after the review. The instrument was constructed in such a way that if administered by another individual given the same condition the findings would remain constant. Face and content validity was used by the project supervisor to determine the validity of the questionnaire.

**Reliability of instrument**

Pilot study was carried out by choosing respondents outside the sample area and offer or administer questionnaire to them, they were required to answer, return the questionnaire and data and the results were analyzed. The results were found consistent and reliable.

**Ethical consideration**

Ethical approval was obtained from the supervisor of this research. Individual consent was taken from the respondent before questionnaire administration. The right of respondent was protected by informing them about the purpose of the study and not coercing them to participate. All information was solely for research purpose and kept confidential during and after the research.

**Discussion**

According to table 1, majority of the respondents (77.14%) where above 30 years of age while most (71.43%) were males. In general, the gender was not significantly correlated to age and plant knowledge [12]. Even though all the respondents generally used plants, it has been common that in many parts of the world, women always demonstrate a more extensive knowledge in the use of plants this is
due to their role in the family as a home-maker. This conforms to the survey carried out in Metropolitan Kano, Nigeria where majority of the respondents were above 36 years and of 36 respondents only five were females [13]. As shown in table 2, plants used in treatment of malaria, fever and diabetes were the most recurrent. The prevalence of malaria and fever may be due to the presence of bushes and stagnant water leading to high density of mosquitoes. Also prevalence of diabetes recorded in this survey maybe due to the fact that most of the food indigenous to this locality is starchy and less consumption of vegetables. The result is conforms to the survey carried out in Akwa Ibom state of Nigeria where plants used for treatment of malaria were most recurrent [14]. This is in contrast with the survey carried out among the Esan people of Edo state where gastro-intestinal disease had the highest number of herbal plants for its treatment [15]. Trees were the most frequently used plant form as shown in figure 1. This is in contrast to the survey carried out in Babungo, Camaroon where herbs were most frequently used plant form, the survey carried out in Edo state among the people of Esan where leaf was mostly used and the survey carried out among the Nandi people of Kenya were leaf formed the major component of plant parts exploited [16,17]. However, in the study carried out in Oshikoto region of Namibia, trees were found to be the most used plant form [18].

cooking as meal/soup, infusion and burning/roasting. Decoction was used mainly for children and exceptional persons who would want to avoid alcohol. This conforms to the survey carried out in Plateau of Allada, Benin (West Africa) where decoction (79%) was the main mode of preparation and the survey carried out among the Yoruba tribe of South Western Nigeria which also showed decoction (90.4%) was the frequently used method of anti-viral herbal preparation [17]. Also cooking as soup is an embracing method of preparation since pepper soup is one of the meals indigenous to this locality (Figures 2 and 3).

| Variable          | Frequency | Percentage |
|-------------------|-----------|------------|
| Age (Years)       |           |            |
| 16-30             | 80        | 22.86      |
| > 30              | 270       | 77.14      |
| Sex               |           |            |
| Female            | 100       | 28.57      |
| Male              | 250       | 71.43      |
| Marital Status    |           |            |
| Single            | 90        | 25.71      |
| Married           | 230       | 65.71      |
| Divorced          | 30        | 8.58       |
| Literacy          |           |            |
| No formal Education | 60     | 17.14      |
| O level           | 150       | 42.86      |
| OND               | 70        | 20         |
| HND               | 50        | 14.29      |
| BSc               | 20        | 5.71       |

Table 1: Socio-demographic Characteristics of the respondents.

According to table I, majority of the respondents 270 (77.14%) were above age 30 years while 250 (71.43%) were males and almost two-third 230 (65.71%) were married. The educational level of the respondents shows that about 150 (42.86%) attained O level, while 70 (20.0%) attained OND and 60 (17.14%) had no formal education.

Figure 1: Forms of plants used for treatment of diseases.
The figure shows that tree 44.59% was the most used forms of plants for the treatment of ailment, followed by herbs 27.02%, shrubs 20.27% and Climber 8.12%.

Figure 2: Methods of preparation of medicinal plants.
Figure 2, shows that 38.54% method of preparation was decoction, 38.05% was crushing, 11.72% was maceration, 4.88% was cook as meal/soup and 3.91% was infusion.

Figure 3: Source of information of medicinal plants.
According to figure 3, 55% of the respondents got their information about medicinal plant from their parents, while 35% undergo training for usage of medicinal plant and 10% had about medicinal plant from their neighbours.

The survey also observed that the following plant parts were used; leaf, stem, flower, bulb, bark, root, fruit, seed/pod/nut juice/sap, whole plant and rhizome. As seen in table 3leaf was most frequently used? This is in contrast with survey carried out in Oshikoto region in Namibia where root was the frequently used [19]. It is however similar to the survey carried out among the Esan people of Edo state, Nigeria, the Nandi people of Kenya and the Babungo of Cameroon where leaf was also the most frequently used plant part. The common methods of preparation were decoction, crushing, maceration,
| Condition                  | Plant(s)                    | Frequency | Value |
|----------------------------|-----------------------------|-----------|-------|
| Convulsion                 | Momordica charantia         | 1         | 8     |
|                            | Xylopia aethiopica          | 1         | 1     |
|                            | Senna alata                 | 2         |       |
|                            | Ocimum gratissimum          | 3         |       |
|                            | Vernonia amygdalina         | 1         |       |
|                            | Zingiber officinale         | 1         |       |
|                            | Momordica charantia         | 5         |       |
|                            | Elaeis guineensis          | 5         |       |
|                            | Allium cepa                 | 1         |       |
|                            | Bryophyllum pinnatum        | 2         |       |
|                            | Ocimum gratissimum          | 1         |       |
|                            | Zingiber officinale         | 1         |       |
|                            | Curcuma longa               | 1         |       |
|                            | Garcinia kola               | 2         |       |
|                            | Elaeis guineensis          | 4         |       |
|                            | Pentaclethra macroloha      | 1         |       |
|                            | Moringa oleifera           | 1         |       |
|                            | Citrus paradisiensis        | 1         |       |
|                            | Garcinia kola               | 1         |       |
|                            | Coccs nucifera              | 2         |       |
|                            | Elaeis guineensis          | 3         |       |
|                            | Citrus sinensis             | 1         |       |
|                            | Ann os a muricata           | 1         |       |
|                            | Moringa oleifera           | 2         |       |
|                            | Ocimum gratissimum          | 2         |       |
|                            | Vernonia amygdalina         | 9         |       |
|                            | Mangifera indica            | 1         |       |
|                            | Zau mays                    | 1         |       |
|                            | Garcinia kola               | 1         |       |
|                            | Momordica charantia         | 3         |       |
|                            | Perssea americana           | 1         |       |
|                            | Hibiscus rosasinensis      | 1         |       |
|                            | Piper guineense             | 3         |       |
| Detoxifier/antioxidant/    |                            | 9         | 1.84  |
| Poison Antidote            |                            |           |       |
| Diarrhoea                  | Psidium guajava             | 1         | 6     |
|                            | Vernonia amygdalina         | 2         |       |
|                            | Ocimum gratissimum          | 2         |       |
|                            | Jatropha curcas             | 1         |       |
|                            | Gossypium hirsutum          | 2         |       |
|                            | Psidium guajava             | 1         |       |
|                            | Vernonia amygdalina         | 1         |       |
|                            | Zingiber officinale         | 1         |       |
|                            | Curcuma longa               | 2         |       |
|                            | Bryophyllum pinnatum        | 4         |       |
|                            | Gossypium hirsutum          | 1         |       |
| Dysentery                  |                            | 5         | 1.02  |
| Dysmeno-Rhema              |                            | 6         | 1.23  |
| Ear pain/ear Sores         |                            | 5         | 1.02  |
|                            |                            |           |       |
| Eczema                     | Vernonia amygdalina         | 1         | 3     |
|                            | Senna alata                 | 2         | 0.61  |
| Eye pain/itches            | Agehatum conyzoides         | 1         | 3     |
|                            | Peperonia pellucida         | 1         | 0.61  |
| Quick Delivery             | Cynodon dactylon            | 1         | 0.2   |
| Female Infertility (in     | Agehatum conyzoides         | 1         | 3     |
| menstruating women)        | Ocimum gratissimum          | 2         |       |
|                            | Jatropha curcas             | 1         |       |
|                            | Psidium guajava             | 1         |       |
|                            | Citrus aurantifolia         | 1         |       |
|                            | Mangifera indica            | 4         |       |
|                            | Anacardium Occident ale     | 2         |       |
|                            | Cymbopogon citratus         | 3         |       |
|                            | Perssea americana           | 1         |       |
|                            | Azadirachita indica         | 2         |       |
|                            | Cocos nucifera              | 1         |       |
| Fever                      |                            | 32        | 6.54  |
| Fibroid                    |                            | 2         | 0.41  |
| Fractures                  | Cynodon dactylon            | 1         | 1     |
|                            | Coccs nucifera              | 1         | 0.2   |
| General ill health/        | Sida acuta                  | 1         |       |
| weakness                   |                            |           |       |
| General vitamins/oil       | Moringa oleifera           | 1         | 2     |
|                            | Psidium guajava             | 1         | 0.61  |
|                            | Elaeis guineensis          | 1         |       |
| Goiter                     | Musa paradisiaca            | 1         | 1     |
|                            | Jatropha curcas             | 1         |       |
|                            | Citrus aurantifolia         | 1         |       |
|                            | Ficusapspifolia             | 1         |       |
|                            | Tamarindus indica           | 1         |       |
|                            | Nicotiana tabacum           | 1         |       |
|                            | Rauwolfia vomitoria         | 1         |       |
|                            | Piper guineense             | 1         |       |
|                            | Rauwolfia Arachis spp       | 1         |       |
| Haemorrhage                | Jatropha curcas             | 1         | 10    |
|                            | Choromolena odorata         | 1         | 2.04  |
|                            | Musa paradisiaca            | 1         |       |
|                            | Momordica charantia         | 1         |       |
|                            | Peperonia pellucida         | 1         |       |
| Hair lice                  |                            | 1         | 0.2   |
|                            | Jatropha curcas             | 1         |       |
|                            | Citrus aurantifolia         | 1         |       |
|                            | Aframomum melegueta         | 1         |       |
| Headache                   |                            | 4         | 0.82  |
|                            | Allium cep a                | 1         |       |
| Condition                                | Plant                  | Frequency | Preference | Note |
|------------------------------------------|------------------------|-----------|------------|------|
| Heart diseases                           | *Musa paradisiaca*    | 1         | 2          | 0.41 |
| HIV                                      | *Hibiscus rosasinensis* | 1         | 1          | 0.2  |
| Hepatitis and liver infections           | *Zingiber officinale*  | 1         |            |      |
| Henia                                    | *Curcuma longa*        | 6         | 1          | 1.23 |
| HIV                                      | *Garcinia kola*        | 1         |            |      |
| HIV                                      | *Cocos nucifera*       | 1         |            |      |
| Hepatitis and liver infections           | *Allium cepa*          | 1         |            |      |
| Henia                                    | *Allium sativum*       | 1         |            |      |
| Henia                                    | *Dioscorea bulbifera*  | 1         |            |      |
| Hot flushes and Miscarriage              | *Li q u i dam bar styraclif* | 1     |            |      |
| Hot flushes and Miscarriage              | *Curcuma longa Momordica charantia* | 1 |            | 1.02 |
| Hypertension                             | *Peperomia pellicida*  | 1         | 2          |      |
| Hypertension                             | *Moringa oleifera*     | 2         |            |      |
| Hypertension                             | *Ocimum gratissimum*   | 2         |            |      |
| Hypertension                             | *Acalypha marginata*   | 3         |            |      |
| Hypertension                             | *Musa paradisiaca*     | 1         |            |      |
| Hypertension                             | *Cymbopogon citratus*  | 1         |            |      |
| Hypertension                             | *Zea mays*             | 1         | 19         | 3.89 |
| Hypertension                             | *Aloe vera*            | 1         |            |      |
| Hypertension                             | *Terminalia catappa*   | 1         |            |      |
| Hypertension                             | *Dialium guineense*    | 1         |            |      |
| Hypertension                             | *Viscum album*         | 1         |            |      |
| Hypertension                             | *Ficus asperifolia*    | 1         |            |      |
| Hypertension                             | *Allium sativum*       | 1         |            |      |
| Hypertension                             | *Xylopia aethiopica*   | 1         |            |      |
| Hypertension                             | *Zingiber officinale*  | 1         |            |      |
| Impotence                                | *Cola acuminata*       | 1         | 4          | 0.82 |
| Impotence                                | *Garcinia kola*        | 1         |            |      |
| Impotence                                | *Allium sativum*       | 1         |            |      |
| Impotence                                | *Musa sapientum*       | 1         | 2          | 0.41 |
| Impotence                                | *Citrus sinensis*      | 1         |            |      |
| Impotence                                | *Chromolaena odorata*  | 1         | 2          | 0.41 |
| Impotence                                | *Cymbopogon citratus*  | 1         |            |      |
| Insecticide                              | *Cola acuminata*       | 1         | 2          | 0.41 |
| Insecticide                              | *Terminalia catappa*   | 1         |            |      |
| Insecticide                              | *Carica papaya*        | 1         |            |      |
| Insecticide                              | *Bryophyllum pinnatum* | 1         |            |      |
| Insecticide                              | *Jatropha curcas*      | 9         | 1          | 1.84 |
| Infertility (both male and female)       | *Musa paradisiaca*     | 1         |            |      |
| Infertility (both male and female)       | *Sansewiera lberica*   | 1         |            |      |
| Infertility (both male and female)       | *Piper guineense*      | 1         | 1          | 0.2  |
| Infertility (both male and female)       | *Carica papaya*        | 1         |            |      |
| Infertility (both male and female)       | *Ocimum gratissimum*   | 1         | 18         | 3.68 |
| Infertility (both male and female)       | *Jatropha curcas*      | 1         |            |      |
| Infertility (both male and female)       | *Lansium domesticum*   | 1         |            |      |
| Kidney infection/ Diseases               | *Zea mays*             | 4         |            | 0.82 |
| Kidney infection/ Diseases               | *Cocos nucifera*       | 1         |            |      |
| Kidney infection/ Diseases               | *Sida acuta*           | 1         |            |      |
| Low sperm Count                         | *Hibiscus rosasinensis* | 1         | 1          | 0.2  |
| Lymphadenopathy                          | *Dialium guineense*    | 1         |            | 0.2  |
| Lymphadenopathy                          | *Carica papaya*        | 7         |            | 11.86|
| Lymphadenopathy                          | *Alistonia browni*     | 1         |            |      |
| Lymphadenopathy                          | *Ocimum gratissimum*   | 2         |            |      |
| Lymphadenopathy                          | *Phyllanthus amarus*   | 3         |            |      |
| Lymphadenopathy                          | *Psidium guajava*      | 2         |            |      |
| Lymphadenopathy                          | *Lansium domesticum*   | 8         |            |      |
| Malaria/ malaria fever                   | *Citrus aurantifolia*  | 4         |            |      |
| Malaria/ malaria fever                   | *Gossypium hirsutum*   | 3         |            |      |
| Malaria/ malaria fever                   | *Mangifera indica*     | 6         |            |      |
| Malaria/ malaria fever                   | *Anacardium occidentale* | 2    |            |      |
| Malaria/ malaria fever                   | *Cymbopogon citratus*  | 2         |            |      |
| Malaria/ malaria fever                   | *Aloe vera*            | 2         |            |      |
| Malaria/ malaria fever                   | *Curcuma longa*        | 1         |            |      |
| Malaria/ malaria fever                   | *Dialium guineense*    | 1         |            |      |
| Malaria/ malaria fever                   | *Newbouldia laevis*    | 1         |            |      |
| Malaria/ malaria fever                   | *Garcinia kola*        | 1         |            |      |
| Malaria/ malaria fever                   | *Sida acuta*           | 1         |            |      |
| Mental illness                           | *Azadirachta indica*   | 1         |            |      |
| Mental illness                           | *Pentaclethra macroloba* | 1   |            |      |
| Mental illness                           | *Xylopia aethiopica*   | 1         |            |      |
| Mental illness                           | *Acalypha wilkesiana*  | 1         |            |      |
| Mental illness                           | *Codiaeum variegatum*  | 1         |            |      |
| Mental illness                           | *Vernonia amygdalina*  | 1         |            |      |
| Mental illness                           | *Capiscium frutescens* | 1         |            |      |
| Mental illness                           | *Ageratum conyzoides*  | 1         |            |      |
| Mental illness                           | *Citrus aurantifolia*  | 1         | 3          | 0.61 |
| Mental illness                           | *Capsicum annuum*      | 1         |            |      |
| Mental illness                           | *Cocos nucifera*       | 1         | 1          | 0.41 |
| Measles                                  | *Rauwolfia vomitoria*  | 1         |            |      |
| Condition                         | Plant(s)                        | Usage Count | Usage Code |
|----------------------------------|---------------------------------|-------------|------------|
| Nervous Disorder                 | Cymbopogon citratus             | 1           | 1          |
| Obesity/weight loss              | Citrus aurantiifolia            | 1           | 4          |
|                                  | Zea mays                        | 1           | 1          |
| Edema                            | Alchornea laxijlora             | 1           | 7          |
| Pains-muscle, waist, chest, back | Cola nitida                     | 1           | 7          |
|                                  | Persia americana                | 1           |           |
|                                  | Ficus asperifolia               | 1           |           |
|                                  | Hibiscus rosasinensis           | 1           |           |
|                                  | Carica papaya                   | 1           |           |
|                                  | Vernonia amygdalina             | 1           |           |
|                                  | Senna alata                     | 1           |           |
|                                  | Curcuma longa                   | 1           |           |
| Pile                             |                                | 5           | 1.02       |
| Pimples                          | Senna alata                     | 2           | 2          |
| Poor memory                      | Cocos nucifera                  | 1           | 1          |
| Pregnancy development           | Aframomum melegueta             | 1           | 2          |
| Prevention of injury            | Tamarindus indica               | 1           |           |
|                                  | Ageratum conyzoides Aframomum melegueta | 1         | 2          |
| Venereal Diseases                |                                | 4           | 0.82       |
| Skin disease and infections      |                                | 5           | 1.64       |
| Sore/wound healing               |                                | 10          | 2.04       |
| Splenomegaly                     |                                | 2           | 0.41       |

| Condition                         | Plant(s)                        | Usage Count | Usage Code |
|----------------------------------|---------------------------------|-------------|------------|
| Stimulant                        | Cola acuminata                  | 1           | 1          |
| Stomach disorder                 | Ocimum gratissimum              | 5           |            |
|                                  | Vernonia amygdalina             | 3           |            |
|                                  | Gossypium hirsutum              | 3           |            |
|                                  | Phyllanthus us a mar as         | 1           |            |
|                                  | Jatropha curcas                 | 1           |            |
|                                  | Chromolaena odorata             | 1           |            |
|                                  | Curcuma longa                   |             |            |
|                                  | Azadirachta indica              |             |            |
|                                  | Epimedium grandiflorum          |             |            |
|                                  | Psidium guajava                 |             |            |
|                                  | Carica papaya                   |             |            |
|                                  | Ageratum conyzoides             |             |            |
|                                  | Vernonia amygdalina             | 5           | 1.02       |
|                                  | Elaeis guineensis               |             |            |
| Syphilis                         | Jatropha curcas                 | 1           | 0.2        |
| Candidal Infection               | Cocos nucifera                  | 1           | 1          |
| Toothache/mouth sores            | Aframomum melegueta             | 1           | 2          |
|                                  | Elaeis guineensis               |             | 0.61       |
|                                  | Spondias mombin                 |             |            |
| Typhoid                          |                                    |             | 4          |
|                                  | Vernonia amygdalina             |             | 0.82       |
|                                  | Gossypium hirsutum              |             |            |
|                                  | Codium variegatum               |             |            |
|                                  | Carica papaya                   |             |            |
|                                  | Citrus aurantiifolia            |             |            |
|                                  | Chromolaena odorata             |             |            |
|                                  | Mangifera indica                |             |            |
| Typhoid fever                    |                                    |             | 8          |
|                                  | Carica papaya                   |             | 1.04       |
|                                  | Citrus aurantiifolia            |             |            |
|                                  | Chromolaena odorata             |             |            |
| Urinary tract infection          | Mangifera indica                |             | 9          |
|                                  |                                 |             | 0.41       |
|                                  |                                 |             |            |
| Venereal Diseases                |                                 |             | 4          |
|                                  |                                 |             | 6.82       |
|                                  |                                 |             |            |
| Vomiting                         |                                 |             |            |
|                                  |                                 |             |            |
| Weak erection                    |                                 |             |            |

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The survey also shows in table 4 that the route of administration included oral, topical, rectal, otic, buccal and ophthalmic. The oral route of administration was the most frequently used. This result is in agreement with the study carried out on the survey of medicinal plants used by the Nandi people of Kenya and the survey of medicinal plants use among the Esan people of Edo state, Nigeria. An ethnobotanical survey of medicinal plants used in treating viral infection among Yoruba tribe of South Western Nigeria also showed that oral application had the highest mode of administration (83.7%). From the result, the prevalent disease conditions included malaria/fever, diabetes, hypertension, jaundice, convulsion, anemia/hematinics, stomach pain/cleansing, cough, sores/wound healing and hemorrhage. Malaria was the prevalent disease condition treated with medicinal plants as shown in table 5. Malaria is one of the world’s most important parasitic disease and a leading cause of death especially in developing countries leading to about 1.2 million estimated deaths each year in Africa (WHO, 2014), with pregnant women and children below 5 years being mostly affected [11].

The problem of resistance to existing antimalarial agents by parasite has necessitated the search for new and potent agents, and the focus of researchers is on natural plants since active compounds like quinine and artemisinin were isolated from plants and have been lead compounds for antimalarial drug development [20]. Plants such as *Carica papaya*, *Alstonia boonei*, *Ocimum gratissimum*, *Phyllanthus amarus*, *Psidium guajava*, *Lansium domesticum*, *Citrus aurantifolia*, *Gossypium hirsutum*, *Mangifera indica*, *Anacardium occidentale*, *Cymbopogon citratus*, *Aloe vera*, *Curcuma longa*, *Sidaca acuta*, *Azadirachta indica*, *Garcinia kola*, *Xylopia aethiopica*, *Vernonia amygdalina*, *Carica papaya*, have been identified to be effective and used for the treatment of malaria and fever by the people in Ughelli North Local Government Area of Delta State.

It is clear from current study that malaria appears to be the most frequently treated ailment with medicinal plants, with leafs being the most used plant part, and trees as the most frequently used form. Also, Oral routes were the most frequent route of administration and decoction as the most frequent method of preparation. This study allows for identifying many high value medicinal plant species, indicating high potential for economic development through sustainable collection of these medicinal plants research. Knowledge of the use of plants as medicines remains mostly with the older generation with few youth showing an interest. The phytochemical characterization and pharmacological validation of these plants are to be carried out. More so, awareness regarding the conservation status of rare medicinal plants, domestication strategies as well as appropriate methods of exploitation is crucial for further studies to ensure a sustainable utilization and availability of these plants.

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