Ethnomedical Survey of Plant Species Used for the Treatment of Various Diseases in Mbalom Council Ward of Gwer East Local Government Area of Benue State, Nigeria

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Abstract: *Inadequate information on the uses of medicinal plant species is affecting knowledge transfer of herbal medicines. Consequently, ethnomedical survey of plant species used for treatment of various diseases in Mbalom Council Ward (CW) of Gwer East Local Government Area (LGA) of Benue State, Nigeria was conducted. Stratified, multistage and simple random sampling techniques were adopted to select five communities, 10 villages and 170 respondents comprising 50 Traditional Medical Practitioners (TMPs) and 120 Key Informants (KIs) for the study. The study made use of the primary data. The primary data were obtained with the aid of semi-structured questionnaire and personal observation. Descriptive statistics and Performance Index (PI) were used to analyze field data. The PI was used to analyze the relative performance of plants and diseases in the study area. Results of analysis showed that the elderly persons were more in the herbal practice than the younger ones. Fifty nine plant species belonging to 35 families were cited in the area with Annona senegalensis, having the highest percentage citation of (6.76%) of plant species. The digestive system and specific symptoms groups of diseases were the most reported diseases which made them the most dangerous groups of diseases in the study area. Some of the plant species with high PI for treatment of various diseases were Manihot esculenta, Vernonia amygdalina, Vitex doniana, Tridax procumbens, Cochlospermum planchonii, Chromolaena odarata, Uvaria chamae, Parkia biglobosa and Uvaria chamae amongst others. The major threat to the conservation of medicinal plants was clearing for farming activities (66.67%). The study concludes that the youths should be encouraged to engage in herbal practices to ensure continuity of the practice. Further, the study request government, non-governmental organizations and private individuals to conserve these medicinal plants in the said study area by active participation and through awareness programmes.*

Keywords: *Ethnomedical. Performance index, knowledge, diseases, Mbalom*

1. INTRODUCTION

Traditional medicine according to (WHO, 2011) is the sum total of the knowledge, skills and practices based on the theories, believes and experiences indigenous to different cultures used in the maintenance of health as well as in the prevention of health challenges both physically and mentally. Traditional Herbal Medicine has developed in various communities in Nigeria in response to the health needs of the people. Many communities have therefore developed various traditional systems using locally available resources for the alleviation of their health problems. According to WHO (2001) about 75-80% of the people living in developing countries and mostly in Africa consult Traditional Medical Practitioners (TMPs) for their health care.

The development of traditional medicine in Nigeria has led to various categories of healers, the various healing methods, strategies and remedies that are now well known (Tella, 2006). Before modern / scientific methods of curing sicknesses and diseases came to play, the use of plants for medicine was dominant and available to millions of people in Nigeria in both rural and urban communities.

The introduction of Western culture particularly into rural parts of Africa has had a tremendous negative impact on the role traditional medicine plays (Kiringe, 2005). As Western education, Christianity and increased contact with the global community become an integral part of rural

communities, taboos, traditions and customs have been affected and in some instances abandoned altogether. These challenges notwithstanding, Bamidele *et al.,* (2009) augured that there is increasing evidence that TM would continue to hold sway in both rural and urban communities of Africa even when modern health care facilities are available to meet wide range of health care needs.

There is limited information on plant species used for treatment of various ailments in the study area. Also information on the threats and conservation of the plant species are scanty. This study was therefore conducted to provide information on the plant species used for the treatment various diseases, determine the performance index of the plant and ascertain the threats to conservation of plants that could be used by foresters and government for decision making and policy.

2. THE STUDY AREA

Gwer-East Local Government Area (LGA) is located on longitude 8.60^o E and latitude 7.30^o N. The LGA is bounded by the North by Makurdi LGA, South by Obi and Konshisha LGA, East by Gwer West and Otukpo LGA and West by Gboko and Tarka LGA (Fig 1). The LGA has its head quarters in Aliade town. The LGA has an estimated land area of 2,294km^2 and a population 163,647 at the 2006 census according to the Federal Republic of Nigeria (FRN, 2007) publication. The LGA also has three districts namely; Yonov, Jiriv and Ngyohov and 17 council wards. The inhabitants are predominantly the Tiv ethno linguistic group. Other ethno linguistic groups included the Igbo, Idoma, Egede among others who are settlers.

Federal Ministry of Environment, Nigeria publication (2010), report that the study area lies within the southern guinea savanna. Continuous clearance of the vegetation has led to re-grown vegetation at various strata. The vegetation of the area is more of shrubs than trees. The climate is tropical humid with two distinct seasons which are the wet season and dry season. The dry season is witnessed between the months of November and March while the wet season is witnessed between April and October. The cool dry harmattan weather is witnessed between December and January. The annual rainfall ranges from 1200-2000mm. The temperature is generally very high in the day with a mean maximum and minimum daily temperature of 35 ^{0}C and 21°C respectively
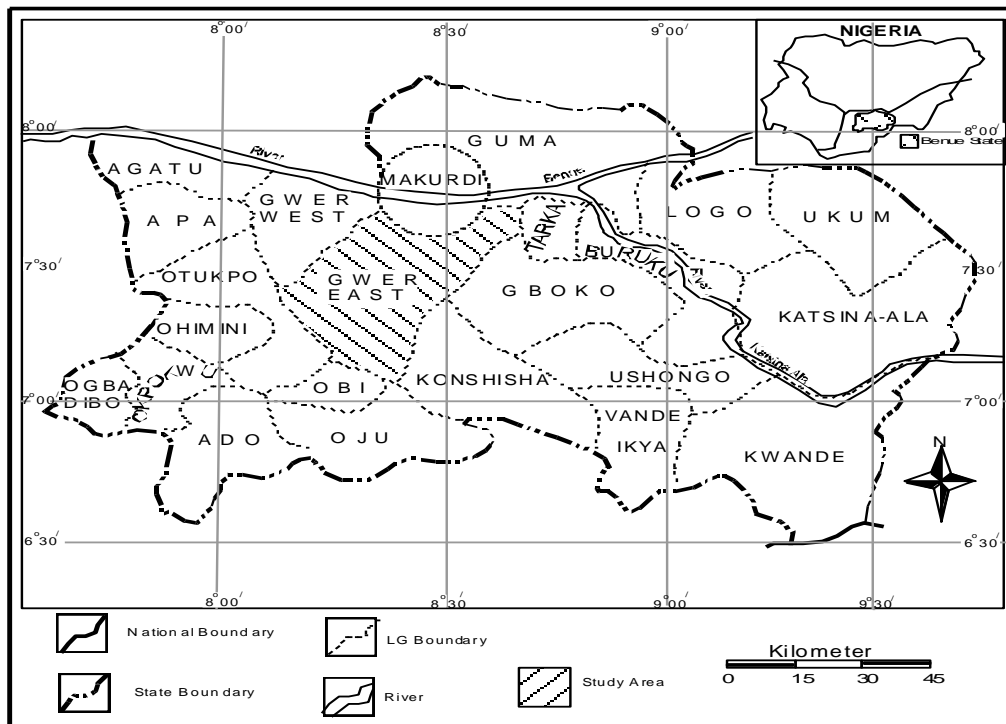

Fig1. *Map of Benue State Showing Gwer East Local Government Area*

Source: *Benue State Ministry of Lands and Survey (2012)*

3. POPULATION, SAMPLING PROCEDURE AND SAMPLE SIZE

The study population consisted of the key informants and Traditional Medical Practitioners (TMPs) in the study area. Stratified and simple random sampling techniques were adopted for the study. The

council ward was stratified along the existing communities and five communities were randomly selected. Two villages were then randomly selected from each of the selected communities. Twelve key informants were randomly selected in each of the selected villages for interview. Also 10 TMPs were randomly selected from each of the selected communities. Therefore, 170 respondents comprising of 120 key informants and 50 TMPs provided information for the study. The communities and villages selected for the study was mentioned in Tab. 1

Table1. *Communities and Villages Selected for the Study*

S/N	Communities	Villages
1	Uburuku	Tse- Aku and Tse- Tor
2	Mbagooso	Tse- Aga and Tse- Yakur
3	Mbagyer	Tse- Nomor and Tse- Shin
4	Mbatsada	Tse- Akaaber and Tse- Ambu
5	Mbakyor	Tse- Aja and Tse- Ukombu

4. DATA COLLECTION

The study was based on primary data. The primary data was collected with the aid of a semi-structured questionnaire and personal observations using a modified form of ethno-botanic methods of Martin (1995) and Betti (2004) while the secondary data was through literature search. The data collected for the study included plants and their medical uses as well as the socio demographic attributes of the respondents. The data for the study was collected for a period of three months (October to December, 2012).

5. DATA ANALYSIS

Simple descriptive statistical tools such as the mean, frequency and tabular presentation and charts percentage were used to analyze the socio demographic attributes of the respondents. Performance Index (PI) of medicinal plants used for treatment of various ailments was analyzed using Performance Index (PI) as proposed by Betti (2002). Performance Index is expressed as:

IP = P1-P2

Where PI =C1/C2 and

P2 =C3/C4

C1= Number of citations of a specific plant for a specific ailment.

C2= Number of citation of a specific plant in the global list

C3= Total number of citation of the disease

C4= Total number of citation for all diseases.

If P1-P2= 0 the plants concerned are rejected.

If P1-P2 < 1/3=0.33 Average performance (IP=1)

If P1-P2 ≤ 2/3= 0.67 High performance (IP=2)

If P1-P2> 2/3=0.67 Very high performance (IP=3)

To illustrate this, an example is given for the performance index of a plant, *Vernonia amygdalina* used for treatment of Diabetes.

C1: number of citations of *Vernonia amygdalina* for treating diabetes = 1

C2: number of citations of *Vernonia amygdalina* in the global list (all diseases) = 5

C3: total number of citations of diabetes = 11

C4: total number of citations for all diseases = 281

P1 (observed) and P2 (theoretical) are defined as follow:

P1: C1/C2 =1/5= 0.2

P2: C3/C4 = 11/281=0.04

Therefore P1-P2= 0.2-0.04= 0.16

IP = 1 (average performance).

6. RESULTS

6.1. Socio- Demographic Attributes of Key Informants

The socio demographic attributes of key informants is presented in Table 2. Only males 100% provided information as key informants. The elderly person's (56.7%) within the 45-70 years age category of were more than the youth (43.3%) of age category of 18-44 years.

In terms of educational status, 66.7% of the respondents were literate while (33.3%) were non literates. Occupational distribution of the respondents shows that more than half of the respondents (51.7%) were farmers, (25%) were traders, (15%) were civil service and (8.3%) were students.

Table2. *Socio- Demographic Attributes of Key Informants in the Study Area n=120*

Variable	Category	F	%
Sex	Male	120	100
Age Group	18 - 45	52	43.3
	45 -70	68	56.7
Educational Status	No formal education	40	33.3
	Primary education	58	48.4
	Post Primary education	17	14.1
	Post Secondary education	5	4.2
Major occupation	Farming	62	51.7
	Trading	30	25.0
	Civil Service	18	15.0
	Schooling	10	8.3

6.2. Socio- Demographic Attributes of Traditional Medical Practitioners

Table 3 shows the Socio Demographic Attributes of the Traditional Medical Practitioners in the study area. All the TMPs that provided information were males (100%). More than half of the TMPs (60%) within the age bracket of 45-70 years were the elderly while (40%) were youths within the age bracket of 18-45 years. In terms of educational status, majority of the respondents (88%) were literate while (12%) were non literate. The TMPs level of involvement in Herbal practices shows that he (60%) of them were involve in the practice on full time practice while (40%) on part time practice. Half of the TMPs (52.0%) that entered the herbal practice by inheritance, (36%) by personal interest, (8%) by training and (4%) got in to the practice by inspiration.

Table3. *Socio Demographic Attributes of Traditional Medical Practitioners in the Study Area n = 50*

Variable	Category	F	%
Sex	Male	50	100
Age Group	Youth	20	40
	Elderly	30	60
Educational Status	No formal education	6	12
	Primary education	18	36
	Post Primary education	20	40
	Post Secondary education	6	12
Level of involvement in Herbal practices	Part time	20	40
	Full time	30	60
Method of entry in to Herbal Practice	Inheritance	26	52
	Personal interest	18	36
	Inspiration	4	8.0
	Training	2	4.0

6.3. Plant Species Cited in Mbalom Council Ward

Fifty nine plant species (Table 4) belonging to 35 different families (Table 5) were cited in the study area. The plant families with the highest number of plants cited were Asteraceae and Fabaceae each having (9.09%) plants cited, followed by Fabaceae (7.30%). *Annona senegalensis* had the highest relative percentage occurrence of (6.76%) which is followed by *Bridelia ferruginea* with (6. 41%).

The plants with the least percentage occurrence were: *Afzelia africana, Ageratum conyzoides, Anthocleista djalonensis, Cissus popunea, Emilia coccinea, Ficus igens, Manihot esculenta,*

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Maranthes polyandra, Newbouldia laevis, pericopis laxiflora, Senna occidentalis, Sterculia setigera, Tridax procumbens, Vitellaria paradoxa and *Vitex doniana.* All these have relative percentages of (0.4%) while *Anthocleista djalonensis* had (0.3%).

Table4. *List of Plants Cited in Mbalom Council Ward*

S/No	Plant Species	Family	Local Name	No. of Citation	%
1	*Acanthospermum hispidum*	Acanthaceae	Asagher mbakur	3	1.1
2	*Afzelia Africana*	Fabaceae	Yiase	1	0.4
3	*Ageratum conyzoides*	Asteraceae	Huhu u tamen	1	0.4
4	*Alchornea cordifolia*	Euphorbiaceae	Ahina	6	2.1
5	*Allium vineale*	Liliaceae	Alabusa u pupuu	2	0.7
6	*Aloe Vera*	Liliaceae	Agbada	3	1.1
7	*Annona senegalensis*	Annonaceae	Ahuur	19	6.8
8	*Anthocleista djalonensis*	Loganiaceae	Kokosu	1	0.3
9	*Azadiracta indica*	Meliaceae	Dogonyaro	10	3.5
10	*Bridelia ferruginea*	Euphorbiaceae	Nom Ikpine	18	6.41
11	*Burkea Africana*	Fabaceae	Gbagbongum	5	1.8
12	*Carica papaya*	Caricaceae	Mbuer	5	1.8
13	*Ceiba pentandra*	Malvaceae	Vambe	13	4.6
14	*Chochcospermum planchoni*	Bixaceae	Kpavande	16	5.7
15	*Chromolaena odorata*	Asteraceae	Bokpali	6	2.1
16	*Ceiba pentandra*	Malvaceae	Vambe	13	4.6
17	*Cissus popunea*	Vitaceae	Ager	1	0.4
18	*Citrus aurantium*	Rutaceae	Alun u angen	3	1.1
19	*Daniellia oliveri*	Fabaceae	Chiha	5	1.8
20	*Dracaena Smithii*	Liliaceae	Chilakem	2	0.7
21	*Emilia coccinea*	Asteraceae	Aninge	1	0.4
22	*Erythrina senegalensis*	Fabaceae	Ishohol	4	1.4
23	*Ficus igens*	Moraceae	Hon	1	0.4
24	*Ficus polita*	Moraceae	Akinde	9	3.4
25	*Gmelina arborea*	Verbenaceae	Mlina	4	1.4
26	*Grewia venusta*	Tiliaceae	Hueza	8	2.9
27	*Hibiscus asper*	Malvaceae	Ashe	4	1.4
28	*Imperata cylindrinca*	Poaceae	Ihila	8	2.9
29	*Impomoea batata*	Convolvulaceae	Atsaka	3	1.1
30	*Kaya senegalensis*	Meliaceae	Haa u kiriki	9	3.2
31	*Loranthus spp.*	Loranthaceae	Nonon	2	0.7
32	*Mangifera indica*	Anacardiaceae	Mungur	5	1.8
33	*Manihot esculenta*	Euphorbiaceae	Logo	1	0.4
34	*Maranthes polyandra*	Anacardiaceae	Ibyua	1	0.4
35	*Moringa oleifera*	Moringaceae	Jelegede	7	2.5
36	*Musa sapientum*	Musaseae	Ayaba	2	0.7
37	*Newbouldia laevis*	Bignoniaceae	Ashisham	1	0.4
38	*Occimum gratissimum*	Lamiaceae	Kunguleku u utamen	14	5
39	*Parkia biglobosa*	Fabaceae	Nune	6	2.1
40	*pericopis laxiflora*	Fabaceae	Jiagba	1	0.4
41	*pilostigma thonningii*	Fabaceae	Nyihar/Yakpande	4	1.4
42	*prosopis Africana*	Fabaceae	Gbaaye	15	5.3
43	*saccharum officinarum*	Poaceae	Likye	2	0.7
44	*Sarcocephalus latifolius*	Rubiaceae	Ikyura u kase	7	2.5
45	*Scleria verrucosa*	Cyperaceae	Suswam	2	0.7
46	*Senna occidentalis*	Fabaceae	Tsetsa	1	0.4
47	*Spondias mombin*	Anacardiaceae	Konkuaa	5	1.8
48	*Sterculia setigera*	Steculiaceae	Kumenduur	1	0.4
49	*syzygium guineanse*	Myrtaceae	Mho	4	1.4
50	*Tectona grandis*	Fabaceae	Kpaa	11	4
51	*Tephrosia bracteolate*	Fabaceae	Agenga	5	1.8
52	*Terminalia avicennoides*	Combrataceae	Kuegh	6	2.1
53	*Tridax procumbens*	Asteraceae	Ambi a kyomun	1	0.4
54	*Uvaria chamae*	Annonaceae	Ikyo	2	0.7
55	*Vernonia amygdalina*	Asteraceae	Ityuna	3	1.1
56	*Vitellaria paradoxa*	Sapotaceae	Ichamegh	1	0.4
57	*Vitex doniana*	Verbenaceae	Hulugh	1	0.4
58	*Zingiber officinale*	Zingiberaceae	Seta	2	0.7
59	**Total**			**281**	**100**

Table5. *Plants Families Cited in Mbalom Council Ward*

S/N	Family	Frequency	%
1	Acanthaceae	1	1.81
2	Liliaceae	1	1.81
3	Vitaceae	1	1.81
4	Anacardiaceae	3	5.45
5	Annonaceae	2	3.63
6	Asteraceae	5	9.09
7	Bignoniaceae	1	1.8
8	Malvaceae	1	1.8
9	Fabaceae	5	9.09
10	Caricaceae	1	1.81
11	Cochlospermaceae	1	1.81
12	Combrataceae	1	1.81
13	Convolvulaceae	1	1.81
14	Cyperaceae	1	1.81
15	Euphorbiaceae	2	3.63
16	Poaceae	1	1.81
17	Liliaceae	2	3.63
18	Loganiaceae	1	1.81
19	Loranthaceae	1	1.81
20	Malvaceae	1	1.81
21	Meliaceae	2	3.63
22	Fabaceae	2	3.63
23	Moraceae	2	3.63
24	Moringaceae	1	1.81
25	Musaseae	1	1.81
26	Myrtaceae	1	1.81
27	Fabaceae	4	7.3
28	Poaceae	1	1.81
29	Rubiaceae	1	1.81
30	Rutaceae	1	1.81
31	Sapotaceae	1	1.81
32	Steculiaceae	1	1.81
33	Tiliaceae	1	1.81
34	Verbenaceae	2	3.63
35	Zingiberaceae	1	1.81
Total	--	55	100

6.4. Relative Importance of Diseases Cited in the Study Area

The relative importance of diseases (Fig. 2 and Table. 6) is evaluated based on the number of citations made by both the practitioners and the key informants for all diseases. The digestive system and specific symptoms groups had the highest numbers disease conditions (10 diseases each) which made them the most dangerous groups of the diseases cited. While the least groups of diseases are Infectious diseases, Specific diseases and conditions, Female genital system and male genitor- urinary system with one disease condition in each case.
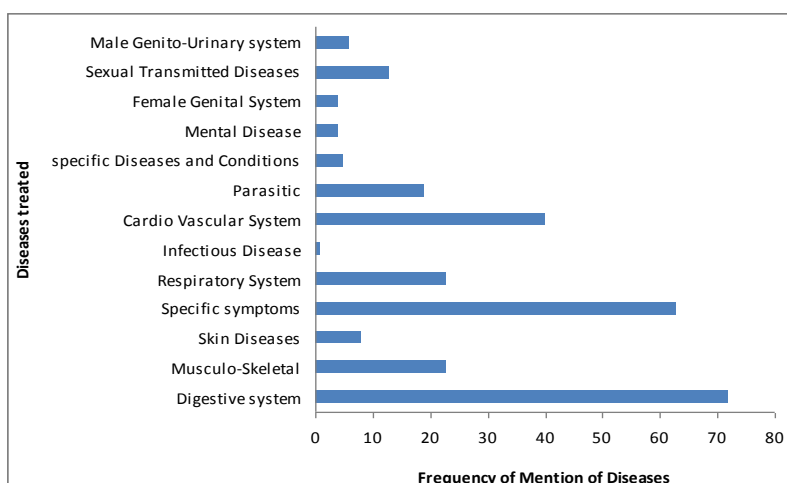
Fig2. *Groups of Diseases in the Study Area*

Table6. *Relative Importance of Diseases in Mbalom Council Ward*

S/No	Groups of Diseases	Disease	Citations	%
1	Digestive system	Amoebic D	12	4.27
		Ulcer	14	4.98
		Vomiting	6	2.14
		Mouth Wounds	4	1.42
		Pile	8	2.85
		Purging	4	1.42
		Stomach ache	14	4.98
		Swollen teeth	1	0.36
		Tooth ache	7	2.49
		Typhoid	2	0.71
2	Musculo-skeletal system	Arthritis	14	4.98
		Body weakness	1	0.36
		Waist pain	8	2.85
3	Specific symptoms	Yellow fever	19	6.76
		Inching of the eyes	1	0.36
		Blisters	1	0.36
		Dizziness	9	3.20
		Head ache	12	4.27
		Apollo	5	1.78
		Eye pains	5	1.78
		Fracture	4	1.42
		Fresh wound	1	0.36
		Jaundice	6	2.14
4	Respiratory system	Cough	11	3.91
		Diabetes	10	3.56
		Pneumonia	2	0.71
5	Infectious Diseases	Chicken pox	1	0.36
6	Cardio vascular system	Blood shortage	9	3.20
		Heart pain	10	3.56
		Hepatitis	10	3.56
		High B.P	10	3.56
		Stroke	10	3.56
7	Parasitic diseases	Malarial fever	16	5.69
		High fever	2	0.71
		Worms	1	0.36
8	Specific diseases and conditions	Hernia	1	0.36
9	Mental	Madness	3	1.07
		Partial madness	1	0.36
10	Female genital system	Menstrual pain	4	1.42
11	Sexually Transmitted	Pubic wounds	2	0.71
		Staphylococcus	11	3.91
12	Male Genito-urinary system	Weak erection	1	0.36
	Total		**281**	**100.00**

6.5. Index Performance of Plant Species

The index performance of the plants for all diseases in the study area is shown in (Appendix I). Table 7 shows the plant species with high and very high performance indices for diseases in the study area. Plant species with high PI included *Manihot esclenta* for Apollo, *Vernonia* amygdalina for diabetes, *Vitex doniana* for dizziness and *Tridax procumbens* for fresh wound. Plant species with very high PI included the *Cochlospermum planchonii* for Amoebic, *Chromolana odarata* for Amoebic, *Uvaria chamae* for body Amoebic, *Parkia biglobosa* for Blood shortage, *Parkia biglobosa* for Body rashes and *Uvaria chamae* for body rashes

	Acanthospermum hispidum	Afzelia africana	Ageratum conyzoides	Alchornea cordifolia	Allium vineale	Aloe vera	Annona senegalensis	Anthocleista djalonensis	Azadiracta indica	Bridelia ferruginea	Burkea africana	carica papaya	Ceiba pentandra	Cochlospermum planchoni	Chromolaena odarata	Cissus populnea	Citrus aurantium	Danielia oliveri	Dracaena Smithii	Emilia coccinea	Erythrina senegalensis	Ficus igens	Ficus polita	Gmelina arborea	Grewia venusta	Hibiscus asper	Imperata cylindrinca	Impomoea batatas	Khaya senegalensis	Loranthus spp.	Mangifera indica	Manihot esculenta	Maranthes polyandra	Moringa oleifera	Musa sapientum	Newbouldia laevis	Ocimum grabssimum	Parkia bigloboosa	Pericopis laxiflora	Pilostigma thonningii	Prosopis africana	Saccharum officinarum	Sarcocephalus labfolia	Scleria verrucosa	Senna occidentalis	Spondias mombin	Sterculia setigera	Syzygium guineense	Tectona grandis	Tephrosia bracteolata	Terminalia avicennoides	Tridax procumbens	Uvaria chamae	Vernonia amygdalina	Viteliaria paradoxa	Vitex doniana	zingiber officinale	Total citation
Amoebic dysentry	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	12
Apolo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Arthritis	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Blisters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Blood shortage	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	9
Body Rashes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5
Body weakness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Chicken pox	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Cough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Diabetes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	10
Dizziness	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	9
Eye pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Fever	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	16
Fresh wound	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	4
Head ache	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Heart pain	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Hepatitis	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Hernia	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
High B.P	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
High Fever	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Iching eyes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Jaundice	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Madness	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Menstrual pain	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Mouth wounds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Partial madness	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Pile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Pneumonia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Pubic wounds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Purging	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Staphylococcus	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	4		4
stomach ache	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Stroke	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Swollen teeth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Tooth ache	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	2	1		1
Typhoid	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Ulcer	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Vomiting	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Waist pain	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Worms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Weak erection	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Wring worm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6
yellow fever	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0	0	3
Fracture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
Total Citation	3	1	1	6	2	3	19	1	1	10	15	5	5	13	16	6	1	3	5	2	1	4	1	9	4	8	4	8	3	9	2	5	1	1	7	2	1	14	6	1	4	15	2	7	2	1	5	1	4	1	15	6	1	2	3	1	2		281

AppendixI: *Index performance of Medicinal Plant Species in Gwer East Local Government Area*

Table7. *Plant Species with High and Very High Performance Index for Diseases*

S/N	Plant Species With High PI for Diseases	Plant Species with Very High PI
1	*Chochcospermum planconi* for Amoebic	*Manihot esclenta* for Apollo
2	*Chromolaena odarata* for Amoebic.	*Vernonia* amygdalina for diabetes
3	*Uvaria chamae* for body Amoebic	*Vitex doniana* for dizziness
4	*Parkia biglobosa* for Blood shortage	*Tridax procumbens* for fresh wound
5	*Uvaria chamae* for Blood shortage	*Emilia coceinea* for head ache
6	*Parkia biglobosa* for Body rashes	*Cissuspopunea* for heart pain
7	*Uvaria chamae* for body rashes	*Aleo vera* for high fever
8	*Erythrina senegalensis* for cough	*Saccharum officinarum* for jaundice
9	*Loranthus Spp.* For Cough	*Maranthes poliandra* for moth wounds
10	*Moringa oleifera* for Diabetes	*Afzelia African* for purging
11	*Occimum gratissimum* for Diabetes	*Anthocleista djalonensis* for staphylococcus
12	*Citrus aurantium* for Dizziness	*Terminalia avicennoides* for Staphylococcus
13	*Spondias mombin* for Eye pain	*Newbouldia laevis* for Stroke
14	*Azadiracta indica* for fever	*Senna occidentalis* for Tooth ache
15	*Scleria verrucosa* for Fever	*Musa sepientum* for Yellow fever
16	*Carica papaya* for heart pain	*Steculia setigera* for Yellow fever.
17	*Grewia venusta* for hepatitis	*Ficus igens* for fracture.

18	*Occimum gratissimum for Jaundice*	
19	*Dracaena smithii for pile*	
20	*Dracaena smithii for menstrual pain*	
21	*Tectona grandis for pile*	
22	*Tectona grandis for pile*	
23	*Alchornea cordifolia for Stomach ache.*	
24	*Annona senegalensis for stomach ache*	
25	*Zingiber officinale for tooth ache*	
26	*Burkea Africana for Typhoid*	
27	*Danillia oliveri for wring worm*	

6.6. Threats to Medicinal Plant Species in the Study Area

The threats to medicinal plants in the study area are shown in Fig. 4. The major threat to medicinal plant species in the study area is clearing for farming (66.67%). Other threats reported by the respondents were logging of tree species (20%), clearing for settlement (6.67%) and wild fires (6.67%).
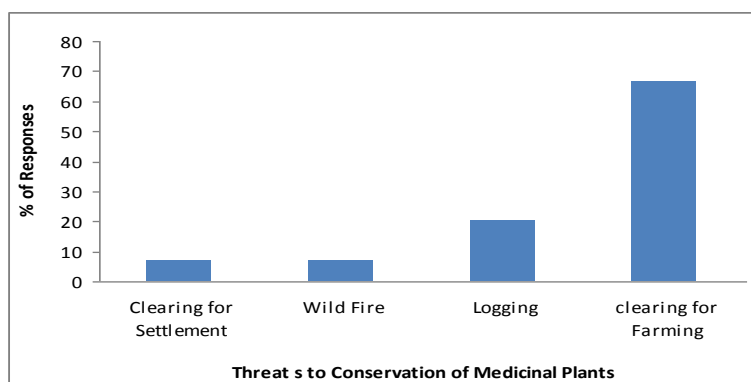
Fig3. *Threats to Conservation of Medicinal Plants*

6.7. Respondents Response to Question on Cultivation of Medicinal Plants

The respondents were asked if they cultivated some of the medicinal plants species. Figure 4 shows that (93%) of the respondents did not cultivate the plant species while (7%) cultivated.
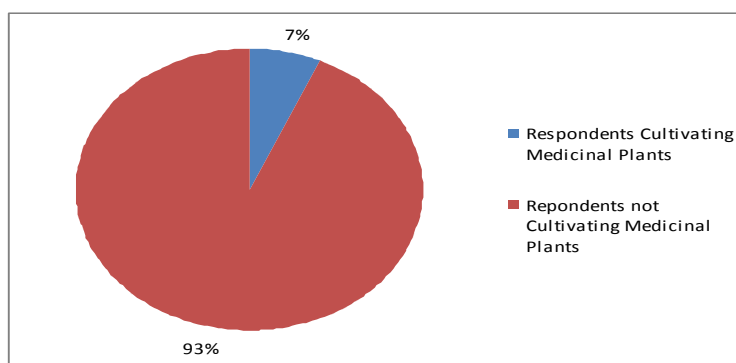
Fig4. *Respondents Response to Question on Cultivation of Medicinal Plants*

7. DISCUSSION

7.1. Socio Demographic Attributes of Key Informants

The total absence of female traditional medical practitioners in the study could be lack of interest amongst the females in herbal practice and secondly the researchers were unlucky to come across female TMPs because there was reported presence of female TMPs in the study area. The low number of key informants and TMPs in the study could be attributed to the youths being in school or they generally gwer not interested in herbal practice. This finding is worrisome as it indicates likelihood of disappearance of traditional medicine practice in these areas after the death of those within the main age range. This finding is line with Abo *et al.,* (2008) and Alade and Omobuwajo (2010).

There were more literate respondents than the non literates. This finding indicates that communication is easy amongst the TMPs and their clients and enhances medicinal plants knowledge transfer. Information recorded on major occupations of the respondents' shows that only 13.33% were students and most students fall under the category of youths. This could be one of the reasons why the percentage of the elderly is greater than that of the youths. High percentage of the TMPs involvement in the herbal practice on full time basis shows that herbal practice as a business is capable of sustaining livelihoods.

7.2. Plant Species and Relative Importance of Diseases Cited in the Study Area

Fifty nine plant species belonging to 35 different families were cited in the study area. The plant families with the highest number of plants cited were Asteraceae and Fabaceae. *Annona senegalensis* had the highest relative percentage occurrence some of the plants with the least percentage occurrence were: *Afzelia africana, Ageratum conyzoides, Anthocleista djalonensis, Cissus populea, Emilia coccinea* and *Ficus igens*.

The digestive system and specific symptoms groups had the highest numbers disease conditions which made them the most dangerous groups of the diseases cited. This finding is line with (Betti, 2002). Malaria is malaria is the most frequently cited disease in rural areas. The least groups of diseases are infectious diseases, Specific diseases and conditions, Female genital system and male genitor- urinary system with one disease condition in each case.

7.3. Index Performance of Plants Species

Some plant species which were more frequently used for a specific disease (with higher *IP* value) were widely known in the literature for their similar usages in other areas. Few of such plants included the followings:

- *Moringa Oleifera and Vernonia Amygdalina:* These plant species were reported to be effective for treatment of diabetes. Similar findings by (Eddous *et al.,* 2002; Grover *et al.,* 2002; Abo *et al.,* 2008) have cited these plant for the same purpose.

- *Azadiracta Indica:* This plant was reported for use for feverish condition. This finding is line with El-Kamali and El-Khalife (1999) in the riverside forest of the southern Blue Nile.

- *Zingiber Officinale*: This plant was mentioned for use against staphylococcus. Bacterium that in habits the skin and mucous membranes causing diseases in the skin, eyes and urinary tract and some produce toxins responsible for septicemia and food poisoning. This finding agrees with works of Giday *et al.,* (2009) and Rokaya *et al.,* (2010).

- *Aloe Vera:* This plant specie was reported for use for high fever and hepatitis. Di Stasi *et al.,* (2009) also reported the uses of *Aloe vera* as anti inflammatory, wound healing ulcer tropical use against edemas, general pains and infections.

- *Ageratum conyzoides:* This plant was mentioned for use as an analgesic. This finding is line with Di Stasi *et al.,* (2009). The reported the use of *Ageratum conyzoides* for internal use as analgesic. Other uses included antirheumatic, against menstrual coli, antiseptic and against skin infection.

8. CONCLUSION

There are many plant species used for Traditional Herbal practice and the people in the study area use herbal medicine as one of their health care system. The plants species mentioned for use for treatment of various ailments have high index performance. Comparism of the uses of the plant species with literatures of similar findings gives credibility to the effectiveness of the plants. The major threat to the medicinal plant species was clearing for farming activities. It is therefore recommended that more attention should be given in ensuring knowledge transfer from the elders to the youths for sustainability of the herbal practice. In addition, government, non-governmental organizations and private individuals are encouraged to ensure sustainability of the plant species by embarking at both *in-situ* and *ex-situ* conservation of the plants.

REFERENCES

Abo, K.A., Fred-Jaiyesimi, A.A. and Jaiyesimi, A.E.A. 2008. Ethnobotanical Studies of Medicinal Plants used in the Management of Diabetes Mellitus in South Western Nigeria. *Journal of Ethnopharmacology*, 115:67-71.

Alade G.O and O.R. Omobuwajo 2010. A Survey of the Activities of Traditional Medicine Practitioners in Southern Ijaw, Sagbama and Ogbia Local Government Areas of Bayelsa State,

Nigeria. *Continental Journal of Pharmaceutical Sciences 4: 40 – 46.* Available on http://www.wiloludjournal.com

Bamidele, J. O. Adebimpe, W. O. and Oladele, E. A. 2009. • Knowledge, Attitude and Use of Alternative Medical Therapy amongst Urban Residents of Osun State, Southwestern Nigeria. *African Journal of Traditional and Complementary and Alternative Medicine*, 6 (3):281- 288.

Benue State Ministry of Lands and Survey 2014. Map of Benue State Showing Study Area.. Benue State Ministry of environment Publication, 2014.

Betti, J.L. 2002. Medicinal Plants sold in Yayounde Markets, Cameroon. *African Monographs 23(2) 47-64.*

Betti, J.L. 2004. An Ethnobotany Study of Medicinal Plants among the Baka Pygmies in the Dja Biosphere Reserve, Cameroon. Journal of Medicinal Plants Research Vol. 3(12):1056-1065. Available online at http://www.academicjournals.org/jmpr. Accessed on 28th January, 2009.

Di Stasia, L.C., Oliveira, G.P., Carvalhaesa, M.A., Queiroz-Juniora, M., Tiena, O.S., Kakinamia, S.H. and Reisb, M.S. 2002. Medicinal plants popularly used in the Brazilian Tropical Atlantic Forest. Fitoterapia 73:69-91. www.elsevier.com/locate/fitote

Eddouks, M., Maghrani, M., Lemhadri, A., Ouahidi, M.L. and Jouad. H. 2002. Ethnopharmacological Survey of Medicinal Plants used for the Treatment of Diabetes Mellitus, Hypertension and Cardiac Diseases in the South-East Region of Morocco (Tafilalet). *Journal of Ethnopharmacology,* 82:97-103

El-Kamali, H.H. and El-Khalifa, K.F. 1999. Folk Medicinal Plants of Riverside Forests of the Southern Blue Nile District, Sudan. Fitoterapia, 70:493-497. www.elsevier.com/locate/fitote

Federal Ministry of Environment (FME) 2010. Compilation of Institutions and Waste Management Regulations in Nigeria. *Federal Ministry of Environment Publication, pp.15.*

Federal Republic of Nigeria (2007). 2006 Census, Official Gazette, No. 24 Vol. 94. *Federal Government Printer, Lagos, Nigeria, FGP 71/52007/2,500 (DL24).*

Giday, M., Asfaw, Z. and Woldu, Z. 2009. Medicinal Plants of the Meinit Ethnic Group of Ethiopia: An Ethnobotanical study. *Journal of Ethnopharmacology, 124: 513–521*

Grover, J.K., Yadav, S. and Vats, V. 2002. Medicinal Plants of India with Anti-diabetic Potential. *Journal of Ethnopharmacology*, 81:81-100.

Kiringe, J.W. 2005. Ecological and Anthropological Threats to Ethno-Medicinal Plant Resources and their Utilization in Maasai Communal Ranches in the Amboseli Region of Kenya. *Journal of Ethnobotany Research and Applications*, 3:231-241.

Martin, C.J. 1995. Ethnobotany, Plants and People. *Conservation Manual*, London. 235pp

Rokaya, M.B., Munzbergova, Z. and Timsina, B. 2010. Ethnobotanical Study of Medicinal Plants from the Humla District of Western Nepal. *Journal of Ethnopharmacology 130:485–504.*

Tella, A. 2006, General Classification of Traditional Healers. *Journal of Ethno- pharmacology, 60:119-200*

World Health Organization (WHO). 2001. Standards and Operational Guidance for Ethics Review of Health-related Research with Human Participants. *WHO, pp.43*

World Health Organzation (WHO). 2011. The World Health Report 6:29

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