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ETHNOBOTANY AMONG THE GASHAKA INHABITANTS OF GASHAKA GUMTI NATIONAL PARK, TARABA STATE, NIGERIA

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ABSTRACT

The study was carried out to investigate use of medicinal plants by the indigenous people of Gashaka enclave to bridge the dearth of information on the indigenous knowledge of the medicinal uses of the existing plant species in the area. The inhabitants of Gashaka village were 300 at the time of this study and 30 were sampled. Simple random sampling technique was employed to select the respondents who were interviewed by the use of Participatory Rural Appraisal (PRA) technique to obtain information on their indigenous knowledge on plant species used for medicinal purpose. All the respondents (100%) claimed that they utilize various parts of plant for treatment of yellow-fever, stomach pain, dysentery, toothache, typhoid, and malaria among other illness. Some species of plants identified to have medicinal uses include Parkia biglobosa, Albizia lebbeck, Prosopis africana, Piliostigma thonninggii, Cassia simea, Daniellia oliverii, Burkea africana, Afzelia africana, Tamarindus indica, Terminalia glaucosens, Terminalia macroptera, Adansonia digitata, Steculia setigera, Bridelia ferruginea, Vitex doniana, Vitelllaria paradoxa, Ficus sycomovus, Nauclea latifolia, Grewia mollis, Anogeissus leiocarpus and Crossopteryx fibriguga. The bark (47%) was most utilized by the majority of the respondents, followed by leaves (23%). The study revealed that medicinal plants form an important component of the natural wealth of Gashaka community of Taraba state, which have been used for treatment various ailments and it has established the fact that various plants were used in one way or the other as medicine. Pragmatic conservation education and strategies should be recommended in order to conserve the rich floral diversity; for further investigation, other ways by which the abundant plant species are utilized in Gashaka Gumti National Park is recommended in other enclaves of the park.

Keywords: Gashaka, Indigenous Knowledge, Medicinal Uses, Conservation, National Park

INTRODUCTION

In recent years, there has been a reawakened scientific interest in the role plants play in many cultures, including medicinal purposes (Connie *et al.*, 1996). Uses of the plants include food, medicine, shelter, hunting, clothing and even religious uses. Ethnobotany is the scientific study of the traditional knowledge and customs of a people concerning plants and their medical, religious, and other uses. A report by Sharon (2008) stated that ethnobotany has recently become a focus of interest since the renewed interest in medicinal plant use; however its origin is dated centuries back. Botany has always been linked to widening the use of plants particularly for medicinal use. This study is intended to identify and document plant species used for health care delivery in the enclave of Gashaka inhabitants of the Gashaka Gumti National Park (GGNP). Connie *et al.*, (1996) stated that, often the indigenous knowledge about the plants can be obtained only by specialists within an indigenous community. The loss of many tropical plants, in addition to the extinction of some indigenous tribes, is detrimental to the ecology of the earth. Native people are being driven from traditional values to 'Western' ways in order to survive. Preservation of the value of plants can only be maintained with the help of the indigenous people who have used this knowledge for centuries. The study of ethnobotany provides an

opportunity to observe the traditional use of plants and to use this knowledge to help protect the earth's ecology from further damage (Price, 2000). It is estimated that there are over 21,000 medicinal plants species worldwide. Medicinal herbs, shrubs and trees are widely used both in the developed and developing world for preparing traditional remedies that find both domestic and commercial usage. Traditional medicine is widely used in the world; however, there is no uniform operating system for all countries, with each variant being strongly bound to the local cultures and beliefs. Health care delivery research activities are lacking in quantity and quality at all levels of the health care systems in Nigeria, typical of a developing nation. Primary health care recognises the importance of complementary, alternative and traditional medicine. Tolu (2008) recommended community leaders to re-orient their members on the value of traditional medicine. Some indigenous plant species including *Enantia chlorantha*, *Alstonia boonei*, *Pyrenacan thastaudtii*, *Azadirachta indica*, *Khaya grandifolia* were discovered to be effective for malaria therapy at Okeigbo in south-west Nigeria. The parts of plants used could either be the bark, roots leaves, or combination of these parts.

In recent times, conservation of forest resources in Nigeria has declined; the situation has been further aggravated by the increasing demand for agricultural land and urban development. Furthermore, deforestation due to increasing population has further reduced the plant diversity in forest lands. Attempts to regenerate these forest resources have not been very successful. This is because most of the plants which are used for domestication produce seeds erratically with poor quality and low viability (Enabor, 1995).

In Nigeria, the rate of deforestation has been estimated at 400,000 hectares per annum (Roby, 1991). As a direct consequence of human activities, it has been pointed out that many plant species, especially medicinal plants, are at risk and many become extinct before they are even described scientifically (Olowokudejo, 1987). The disappearance of many plant species will deplete the country's genetic resources and put our heritage of biodiversity under serious threat. There is therefore, the compelling need to preserve genetic diversity with special attention paid to medicinal species. The best means of conservation is to ensure that the population of species of plants and animals continue to grow and evolve in the wild, in their natural habitats. Such in-situ conservation is achieved both by getting aside areas as nature reserves and national parks (collectively called "protected areas") and by ensuring that as many wild species as possible can continue to survive in managed habitats, such as farms and plantation forests (Tolu, 2008). Plant natural products are a rich source of biologically active compounds. Many of today's medicines are either obtained directly from a natural source or developed from a lead compound obtained from plants (Olaniyi, 2005).

These medicinal plants are accessible, affordable and culturally appropriate source of primary health care for most of the developing countries. Marginalized, rural and indigenous people, who cannot afford or access modern health care systems, are especially dependent traditional medicines. These are culturally familiar, technically simple, financially affordable and generally effective traditional medicines. As such, there is wide spread interest in promoting traditional health system to meet primary health care needs (Tinuola, 2008). In discussing the economic value of medicinal plants Karki and Arun, (2004) noted that medicinal plants offer a wide range of substances, cultural and monetary benefits to people in the world. They provide affordable means of primary health care to poor and marginalized people especially in impoverished rural areas. In some countries like china, Nepal and India, they are an important revenue generating resources providing critical income to economically marginalized and indigenous people. In a condition of sustainable harvesting and optimal usage, the medicinal plants could prove to be a resource that can benefit both the environment and livelihoods in a balanced manner. The result of this investigation brings to lime light the plant species that are significant in primary health care delivery of the inhabitants of Gashaka enclave in Gashaka Gumti National Park.

MATERIALS AND METHODS

Study Area:

This study was carried out in Gashaka Gumti National Park (GGNP) in Nigeria. The area stretches between latitude 7^{o} 30$''$to North and longitude 11^{o} 30$''$to East coordinates of the Park northwards into Adamawa state (Figure 1). Its

eastern borders share boundary with the Cameroon. It covers an area of 6,731km^2. Figure 2 is the map of Gashaka Gumti National Park showing the study area. The southern fringe falls within the Gotel Mountains where the land rises to an attitude of 2,419m above sea level at its peak. The terrain is rugged and uneasy to access. There is also a diversity of habitats with microclimatic difference which produce a variety of vegetation types. In the northern sector i.e. Gumti, the terrain is more or less flat but undulating and gently sloping in some areas. Motorable roads are lacking thus, restricting easy access. Lack of easy accessibility has been significant factor in preservation of the biotic integrity of the park (Akinsoji, 1996).

Figure 1: Map of Nigeria showing the National Parks

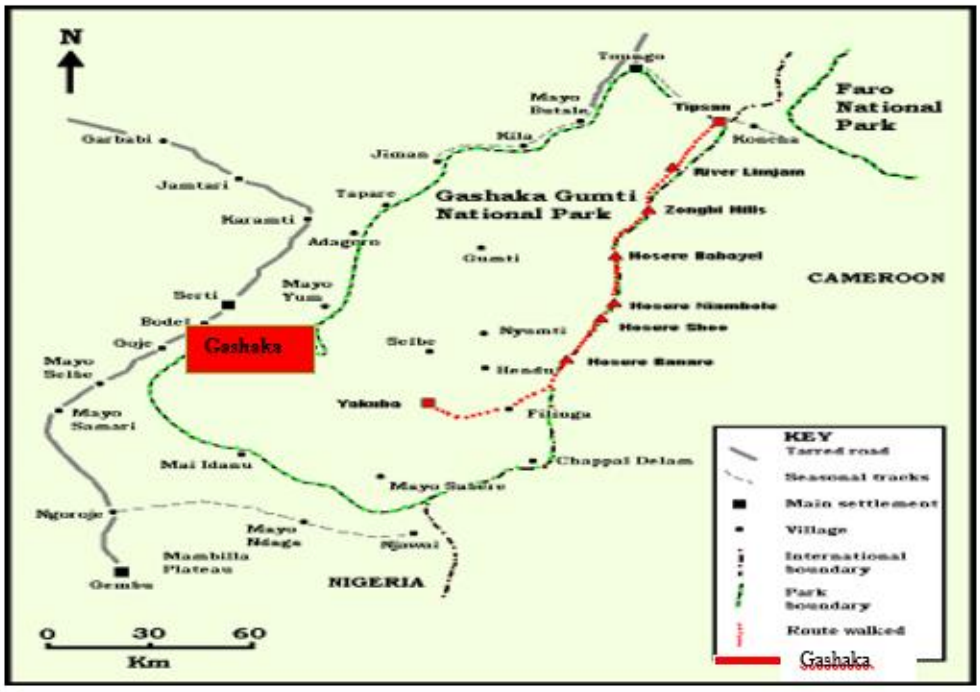

Figure 2: Map of Gashaka Gumti National Park Showing Study Area

Experimental design

One-way Analysis of Variance (ANOVA) was carried out. Descriptive statistics such as frequency, percentages, means and standard deviations were obtained, about plant species and their usage in health care delivery. The village was composed of adults, youths and children. Some villagers as well as some of the park staff who were natives of the community were interviewed in Hausa language. Simple random sampling technique was employed to select the respondents who were interviewed.

Data Collection and Analysis:

The method of data collection was mainly by the use of Participatory Rural Appraisal (PRA) technique. The questions were structured such that comprehensive information on commonly used medicinal plant species was obtained. Open-ended conversation was also employed. The interview schedule were categorised into three sections with a view to sourcing information on the socio-demographic data of the respondents, including gender, age class and educational level. The interview was conducted by the researchers and some staff of Gashaka Gumti National Park who communicates fluently on the indigenous language of the inhabitants of Gashaka enclave. The responses were recorded and analysed. The collected plant samples were identified at the departmental Herbarium and text book on medicinal plants from Nigeria (Tolu, 2008) with respect to their botanical names as well as the common names and the local names.

RESULTS

Socio-Cultural Characteristics of the Respondents

Table 1 reveals that 60% of the respondents were female and 40% were male. As an enclave in the park, there are more women than the men due to the polygamous nature of the families. The mean age in (Table 1) indicates that most of the respondents were in their youthful age and this could make it easier for the acceptability of any conservation programmes that could be introduced to the enclave. Reason is that most exploitation of plants is carried out by this group of respondents.

Table 1: Information on demography of respondents Distribution of Respondents by gender

Gender	**Frequency**	**%**
Male	12	40
Female	18	60
Total	**30**	**100**
Age classes		
20 – 25	3	10
26 – 30	9	30
31 – 35	6	20
36 – 40	6	20
41 – 45	6	20
Total	**30**	**100**
Mean	**32±2**	
Educational level		
Non-formal education	12	40
Adult education	9	30
Completed primary level	3	10
Secondary school level	6	20
Total	**30**	**100**

Source: Field survey, 2014

The above table also indicates that majority of the respondents did not attend non-conventional education systems (70%), while only 20% attended secondary education which is the highest educational standard of the respondents in Gashaka enclave and 10% attended primary school.

Table 2: Plant parts used by Gashaka Enclave for Medicine

Plant Parts	Frequency	%
Leaves	7	23
Stembarks	14	47
Roots	5	17
Seeds	3	10
Fruits	1	3
Total	**30**	**100**

Source: Field survey, 2014

Table 2 revealed that respondents mostly used stem bark of plant species as source of traditional medicine (60%), followed by the leaves (30%) and the roots (10%).

Table 3: Other Cultural Uses of Plants apart from Medicine

Cultural Uses	Frequency	%
Food/drink	8	27
Fodder	4	13
Domestic uses (fuel wood, construction, farm tools, etc.).	18	60
Total	**30**	**100**

Source: Field survey, 2014

Table 3 revealed that all the respondents interviewed claimed that plants are of cultural importance, with domestic uses recording the highest (60%) and fodder the least (13%). The check list of plant species, parts and their medicinal uses in Gashaka enclaves is presented in Table 4.

Table 4: Checklist of Medicinal Plants in Gashaka enclave

S/No.	Species name	Family names	Local names (Hausa)	Common names	Parts used	Medicinal uses
1	*Parkia biglobosa*	Leguminosae-minosoideae	Dorowa, narghi	Locust bean	Bark	toothache
2	*Prosopis africana*	Leguminosae-minosoideae	Kiriya, kohi		Bark	Dysentery
3	*Piliostigma thonningii*	Leguminosae-caesalpinoideae	Kargo, barkehi	Camel's foot tree	Root, bark	Yellow fever, open wound, Dysentery, chest pain
4	*Cassia simea*	Leguminosae-caesalpinoideae	Gama fada	Bombay blackwood	Leaves, roots, bark	Typhoid, menstrual pain, malaria, pile
5	*Daniellia oliverii*	Leguminosae-caesalpinoideae	Maje, kaharlarhi		Seed	Rheumatism
6	*Burkea africana*	Leguminosae-caesalpinoideae	Bakinmakarfo, kokkobi		Bark	Heartburn
7	*Tamarindus indica*	Leguminosae-caesalpinoideae	Tsamiyadjabbe	Tamarind tree	Leaves, fruit	Measles, cleansing of stomach
8	*Terminalia glaucosens*	Combretaceae	Baushe	Tropical almond tree	Bark	Dysentery
9	*Terminalia macroptera*	Combretaceae	Baushekulahi		Leaves, bark	Dysentery
10	*Anogeissus leiocarpus*	Combretaceae	Marke, kojoli		Bark	Cough, naval pain
11	*Nauclea latifolia*	Rubiaceae	Tafashiya, bakurchi	African peach	Roots, leaves	Stomach upset/worm, gonorrhoea skin problem (rashes).
12	*Crossopteryx fibrifuga*	Rubiaceae	Kashinawaki, rimajogohi		Leaves, roots	Fever
13	*Ficus sycomovus*	Moraceae	Baure, yibe	Fig tree	Roots	Cough
14	*Grewia mollis*	Tiliaceae	Dargaza, kelli		Bark	Open wound
15	*Vitellaria paradoxa*	Sapotaceae	Kadangakareji	Shea butter tree	Bark, seed	Fever, fracture, skin problem
16	*Vitex doniana*	Verbenaceae	Dinya, galbihi	Blackberry	Bark, leaves	Fever, fracture, skin problem
17	*Bridelia ferruginea*	Euphorbiaceae	Kirnikishimarehi		Bark, leaves	Typhoid fever, dysentery.
18	*Steculia setigera*	Sterculiaceae	Kukuki Boboli		Bark	Blood clothing in the uterus

Source: Field survey, 2014

DISCUSSION

The educational level of the respondents suggests that the availability of only primary and secondary schools that exists in the study area and have low impact on the people. Therefore, the basis of their support for conservation practice could be linked to the medicinal and other values of the plant species in their environment. This result corroborates Jatau *et al.*, (2013) findings in which they reported that low educational level of respondents is detrimental to assimilation of new ideas among rural dwellers.

The finding of this study with regards to the plant parts used; stembark is more utilized than other plant parts. It has been proved physiologically that removal of plants' bark is a detrimental anthropogenic activity that could lead to species destruction and eventual extinction (Dishan *et al*., 2008; Richard, 2015), therefore there is need that rural communities be enlightened on the best way to extract plant parts for medicinal purposes; thereby, avoiding reduction in tree life through the harvesting of stembark.

The results from other cultural uses of plants apart from medicine suggest that plant species play an important role in the cultural ways of the people in Gashaka. It also shows that, without the plant's species the life of the people will not be alright; as such conservation education is necessary to safe guard the trees for future generation.

The most utilized plant species in the study area includes *Prosopis africana, Piliostigma thonningii, Cassia simea, Vitex doniana, Vitellaria paradoxa, Neuclea latifolia, Bridelia ferruginea, Tamarindu sindica, Terminalia glaucosens, Terminalia macroptera, Anogeissus leiocarpus, Ficus sycomovus* and *Crossopteryx fibrifuga.* These plants were of Leguminosae-minosoideae, Leguminosae-caesalpinoideae, Combretaceae, Rubiaceae, Moraceae, Sapotaceae, Verbenaceae and Euphorbiaceae families. However, the Leguminosae-caesalpinoideae family was mostly utilized. It was also observed that from the table, diseases mostly treated were dysentery, fever, typhoid, malaria, menstrual pain, cough, open wound, stomach upset, and skin rashes.

CONCLUSION

Medicinal plants form an important component of the natural wealth of any rural community of which Gashaka village in Taraba state is not an exception. These plants have been used for curing various ailments since the existence of this Gashaka enclave. The knowledge of the use of plants to treat diseases has been with the people for generations but has not been recorded. Most of the medicinal plants are sourced within the park. In addition to their medicinal uses, some of these plants have other uses. The local population should be educated on sustainable methods of harvesting plants to treat diseases today without compromising their availability for future use.

RECOMMENDATIONS

There is therefore the need for conservation education or awareness within the community, as this will help to protect plants species for their medicinal and other values. Individuals and institutions should be encouraged to domesticate these plants of medicinal values in the enclaves and towns surrounding the Gashaka Gumti National Park (GGNP) in particular and Taraba state in general.

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