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Efficacy of forest plants in the treatment of diabetes in Birnin Gwari Local Government Area, Kaduna State, Nigeria)

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ABSTRACT: The objective of this paper is to examine the efficacy of medicinal plants in the treatment of biabetes in Birnin Gwari Local Government Area, Kaduna State, Nigeria. Eighty (80) Structural questionnaires were administered to identified respondents viz: traditional healer, herbs trader, farmers and civil servants in the Local Government. Descriptive analysis such as frequency tables and percentages were used for the analysis. The result showed that *Verlonia amygdalinia, Acacia nilotica, Allium sativum, Parkia biglobosa, Adonsonia digitata, Phoenix dactyfera, Cocos nucifera, and Psidium guarjava* were the medicinal plants used for treating diabetes in the study area. Research Institute in collaboration with the three arms of government in Nigeria should carry out research on these medicinal plants so as to detect other multipurpose uses of the plants.

Keywords: Medicinal plants; Diabetes mellitus; Birnin Gwari LGA; Kaduna State; Nigeria.

Introduction

Interest has increased by researchers on the use of plants medicinally; both for traditional uses and as potential new source of drugs and treatment. Many plants synthesis substances are useful in the maintenance of health in man and other animals. These include aromatic substance most of which are phenols or their oxygen substituted derivativeness such as tannis, many are secondary metabolites (Louis, 2000; Adamu 2008). A medicinal plants with one or more of its organ, contains substances that can be used for therapeutic purposes or which is a precursor for synthesis of useful drugs. The plants that possess therapeutic properties or exert beneficial pharmacological effects on the animal body care generally designated as medicinal plants. Although there are no apparent morphological characteristics in the medicinal plants growing with them, yet they possess some special qualities or virtues that make them medicinally important. It has now been established that the plants which naturally synthesize and accumulate some secondary metabolites: like alkaloids, glycosides, tannins volaties and contain minerals and vitamins, possess medicinal properties.

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Medicinal plants constitute important natural wealth of a country, they play significant role in providing primary health care services to rural people. They serve as therapeutic agents as well as important raw materials to manufacture traditional and modern medicines. Substantial amount of foreign exchange can be earned by exporting medicinal plants to other countries. In this way indigenous medicinal plants play significant role in the economy of a country. (http://www.mapbad.com). Diabetes inspired the villages to build back yard home garden of medicinal plants and established ten medicinal plants garden at Luxmipur. Diabete has twenty medicinal plants which are commercially important for conservation and activation. Debtec has inspired the villagers to build up back yard home garden of medicinal plants and established 200 medicinal plants garden in 200 houses at Luxmipur district. Great enthusiasm has been found about the rise, cultivation and economic value of medicinal plants among the villagers particularly to our community users. Diabetes is the fastest growing disease in the world today, according to the center for disease control, diabetes is an epidemic. 17 million American have diabetes with 5.9 million completely unaware that they even have the disease. Diabetes is the fastest 5th leading cause of death in the world with over 200,000 deaths each year from diabetes related complications.

Symptoms of Diabetes

A person suffering from diabetes will show the following symptoms:

1. Excessive thirst
2. Constant hunger
3. Excessive urination
4. Weight lost for no reason
5. Hard breathing
6. Vision changes

These symptoms may occur suddenly; people with type 2 diabetes may have no symptoms and are only diagnosed after many years of consent. As a result for consequency, almost half of all people with type 2 diabetes are not aware that they have it (http://www.who.int/diabetes/BOOKLET-HTML/ent/index/html).
The need for this research however, is to identify the medicinal plants used for treating diabetes in Birnin Gwari Local Government of Kaduna State.

Study Area

The study was conducted in Birnin Gwari Local Government Area. The local government was created in September, 1976. The local government is between latitude $12^0 \, 20^1$ N and longitude $9^0 \, 10^1$E which lies in the western part of Kaduna State. It share border with Zamfara state, Niger state and Katsina state. The population is 222,367 (NPC 2006). Birnin Gwari has fourteen (14) districts, namely; Birnin Gwari central, Gaym, Bugai, Kutemeshi, Tabanni, Dogon Dawa, Kakangi, Randagi, Kazage, Kungi, Maganda, Saulawa, Saminaka, and Kuyello. The main ethnic groups are Hausa, Fulani, Gwari and Kamuku and a handful of settled Yoruba and Igbos.
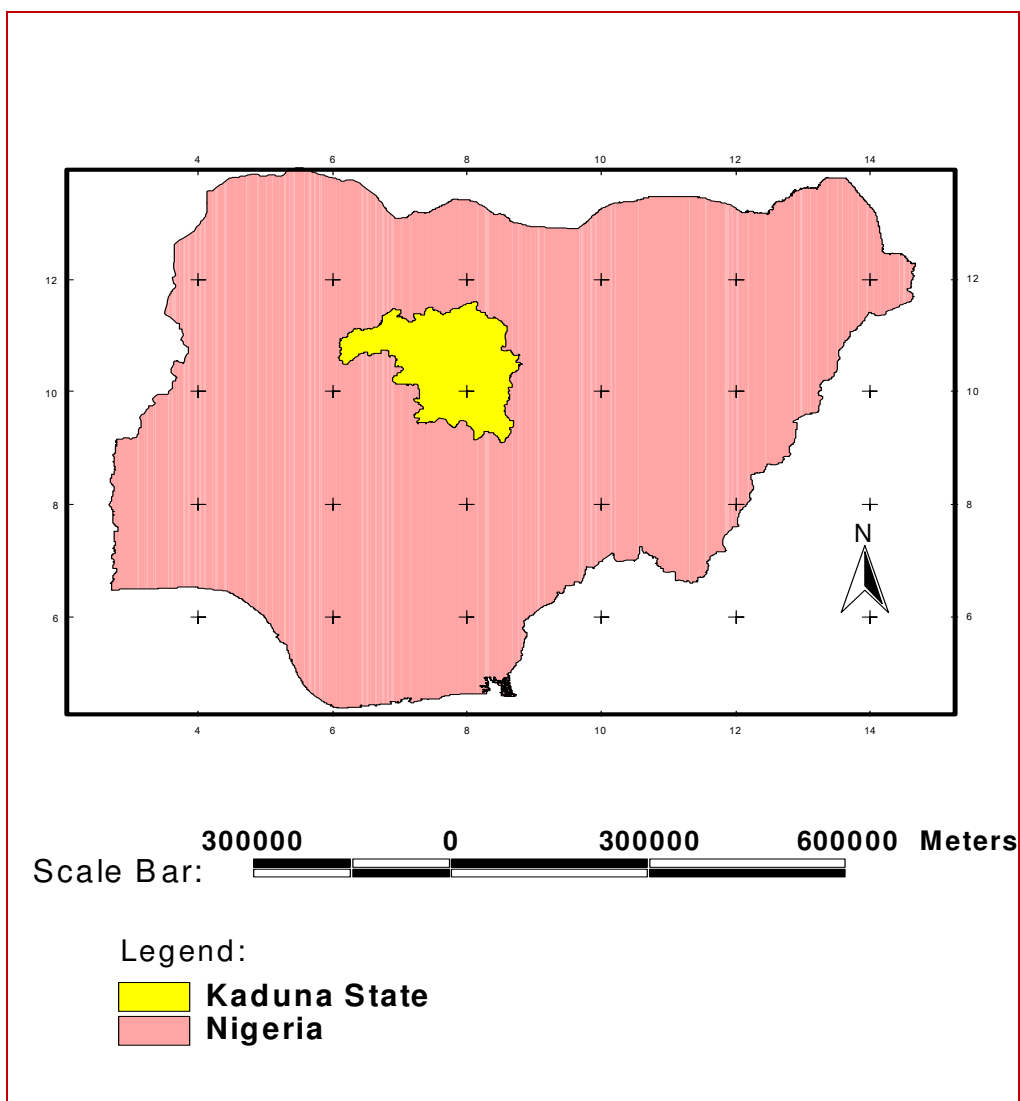
Figure 1: Map of Nigeria showing the study area

Method of Data Collection

The instrument used for data collection is the questionnaire. The questionnaire is divided into two sections (A and B). Section 'A' requested for bio data of the respondents which were used for identification purpose, while section 'B' was used to identify the forest plants used for treating diabetic patients.

Sampling Technique

The population of the study covered the traditional healers, medicinal traders, civil servants and farmers. A total of 80 questionnaires were administered to the respondents randomly.

Tools of Analysis

Descriptive statistics such as tables, frequency distribution and percentages were used to analysed the data.

Results and Discussion

Section A: Demographic characteristics of respondents

Table 1 showed that 31.25 % of the respondents in Birnin Gwari fall under the age 41- 50 and 6.25% fall under 10-20 ages. This implies that the most active and physically capable people that are involved in providing traditional medicinal in the study area are the older categories and are in the majority. They were also known to be very active in administering herbs to the affected people. This is due to the fact that the older they were, the more experienced they are in knowing the type of plants to be used as a treatment for diabetes. This is in support of Faleyimu and Oluwalana (2008) that older people are actively involved in the use and sourcing of medicinal plants.

Table 1: Age distribution of respondents

Age	Frequency	Percentage (%)
10 – 20	5	6.25
21 – 30	11	13.75
31 – 40	9	11.25
41 – 50	25	31.25
51 – 60	10	12.5
>60	20	25.0
TOTAL	**80**	**100**

SOURCE: Field survey 2009

Table 2 shows that 62.5% of the respondents are male while 37.5% are female. The males were thought to have high level of experience in providing medicinal plants because they are the ones that go to the farm and the forest to get these medicinal plants. This result disagrees with Faleyimu and Oluwalana (2008) that female gender dominated herb trading in Ogun State, Nigeria.

Table 2: Distribution of sex of the respondents.

Sexe	Frequency	Percentage (%)
Male	50	6.25
Female	30	37.5
TOTAL	**80**	**100**

SOURCE: Field survey 2009

Table 3 shows that most of the respondents in the study area who engage in providing traditional medicine were married (43.75%) while those that were single, divorced and widows were 18.75% each. This implies that most of the respondents that use medicinal plants to treat of diabetes were married; this justifies the high premium that Nigerian society places on marriage. This support Faleyimu *et al.,* (2008) that the majority of the inhabitants of Origun community in Ibadan Oyo State are married which made them to be more responsible.

Table 3: Distribution of marital status of the respondent.

Age	Frequency	Percentage (%)
Single	15	18.75
Married	35	43.75
Divorced	15	18.75
Widow(er)	15	18.75
TOTAL	**80**	**100**

SOURCE: Field survey 2009

As shown in Table 4, most of the respondents in Birnin Gwari Local Government Area are traditional healers (31.25%) while Herb traders, farmers 25% and civil servants were 25%, 25% ad 18.75 respectively. This implies that the majority of the respondents were involves in traditional medicine as their primary occupation. All other economic activities are additional source of income.

Table 4:- Distribution of occupational status of the respondents.

Age	Frequency	Percentage (%)
Traditional healers	25	31.25
Herb Traders	20	25.0
Civil Servants	15	18.75
Farmers	20	25.0
TOTAL	**80**	**100**

SOURCE: Field survey 2009

Table 5 showed that most of the respondents that is, about 67 (85%) were literate. 15 of them had primary education, 37.5% attended secondary school while 27.5% of the respondents have tertiary education and (16.25%) of the respondents were illiterate (no formal education). This will influence the use of medicinal plants as a treatment. The fact that a greater percentage of the respondents are educated even up to tertiary level showed that they can critically analyze issues and give fair judgment (Faleyimu *et al,* 2008).

Table 5: Distribution of educational status of the respondents.

Age	Frequency	Percentage (%)
Primary School	15	18.75
Secondary School	30	37.5
Tertiary Institution	22	27.5
No Formal Education	13	16.25
TOTAL	**80**	**100**

SOURCE: Field survey 2009

SECTION B

The traditional method of using forest plants to treat diseases is almost universal. As a result, more people now rely on plants as components of their primary health care. The table below is comprised of trees and shrubs that are naturally used to treat diabetes.

Table 6: Medicinal plants use for the treatment of diabetes.

S/N	Local name	Botanical name	Family name	Type of Plant	Cultivated (C) or wild (W)	Part use	Method/ Mode of use
	Shuwaka	*Verlonia amygdalinia Del.*	Compos itae	S	C	leaves	Use it to prepare soup with little amount of salt, to be taken at least ones in a week.
	Bagaruwa	*Acacia nilotica Linn*	Legumi nosae	T	W	Leaves	These two herbs are cooked together with water and small quantity of honey, to be taken once in a day.
	Tafarnuwa	*Allium sativum Linn*	Alliacea e	S	C	bulb	
	Doruwa	*Parkia biglobosa Jacq.*	Legumi nosae	T	W	fruits	Grind the fruits to powder and remove the seeds, and then cook it. Northern people call the decotion 'kahuka'. To be taken once in a week.

S/N	Local name	Botanical name	Family name	Type of Plant	Cultivated (C) or wild (W)	Part use	Method/ Mode of use
	Kuka	*Adonsonia digitata Linn*	Bombac aceae	T	W	fruits	Grind the fruits to powder and remove the seeds then mix it with yoghurt or cattle milk and add water to it. To be taken two times in a day.
	Dabino	*Date palm Phoenix dactyfera*	Palmae	T	C	Seed	Grind the seeds, then mix it with zam zam water (from Saudi Arabia) To be taken ones in a day for 2 weeks.
	kwakwa	*Cocos nucifera Linn*	Palmae	T	C	Bulb	Drink the liquid that is inside the nut and it should be taken 2 times in a day.
	Ugun	*Telfaria occidentalis*	Cucurbit aceae	S	C	leaves	Prepare soup with it using small quantity of salt, and it should be taken once in a day.
	Sabara	*Guiera senegalensis*	*Combret aceae*	T	W	leaves	Cook the leaves, and then drink the extract once in a day.
	Dinya	*Vitex doniana*	Verbena ceae	T	W	Roots	Cook the roots, add with red potassium, and drink the water only.
	Gwaiba	*Psidium guarjava Linn*	Anacard iaceae	T	C	leaves	Grind the leaves with potassium, then drink the water only.

T-tree; S-shrub; W-wild; C-cultivated

Table 6 revealed that most of the medicinal plants identified are trees, some are cultivated in farms and nearby homes while some are mainly found in the wild (forest). The plants identified are mostly used as single.

Conclusion and recommendation

The importance of traditional treatment using medicinal plants cannot be over emphasized. The study has shown that diabetes, a deadly disease can be treated with common plants found around the home, for instance guava (*Psidium guarjava)* and onion (*Allium sativum).* It is however, recommended that:

Research Institutes in collaboration with the three arms of government in Nigeria should carry out research on these medicinal plants so as to detect other multipurpose uses of the plants.

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