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Ethnobiological Survey of Traditional Medicine Practice for The Treatment of Piles and Diabetes Mellitus in Oyo State

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A comprehensive survey with the aim of documenting traditional medicinal practices was carried out between November 2008 and January 2012 in 16 different locations across Oyo State. This article focuses on the treatment of piles and diabetes mellitus. Semi-structured questionnaires and open-ended informal interviews were administered during series of repeated visits to a total of 31 respondents. Seventeen herbal recipes were described for the treatment of diabetes mellitus, while 30 herbal recipes were described treating piles in this study. Fifty plants, 1 animal and 9 other ingredients were described as being used in the preparations of the described traditional remedies. The 50 plants spread across 33 plant families. Herbal products were administered orally for diabetes mellitus and by oral administration and topical application for piles. Furthermore, *Vernonia amygdalina* and *Ocimum gratissimum* were the most frequently used plant species mentioned for the treatment of diabetes mellitus and piles in Oyo State.

Keyword: Piles, Diabetes Mellitus, Traditional Medicinal Practices, Oyo State, Nigeria.

1. Introduction

In order to preserve traditional medicinal knowledge, it is necessary that inventories of plants with therapeutic value are carried out, and the knowledge related to their use documented in systematic studies. These studies can have other values too for society besides conserving traditional knowledge, for they can help to identify plants with market potential that can generate incomes for local communities. Furthermore, ethnobiological surveys provide the rationale for selection and scientific investigation of medicinal plants and animals, since some of these indigenous remedies have successfully been used by significant numbers of people over extended periods of time [1].

As a result, series of ethnobiological studies are being carried out by botanists, zoologists, anthropologists, archaeologists, social scientists and other related scholars. Most of these studies target the aged, the herbalists, herb sellers, herb collectors, hunters and other groups of people who have constant contact with nature, especially in rural areas. Through these surveys, ethnomedicinal significance of plants and animals in the study areas are documented and preserved from erosion. Furthermore, the conservation status of these plants can be projected using the rates at which they are being exploited presently.

A comprehensive ethnoniological survey was carried out within selected study areas in Oyo State, Nigeria between November 2008 and January 2012. The aim was to compile the different indigenous plants and animals in the study areas and their medicinal significance and uses. The findings of this extensive survey were voluminous and could not be published as a single research article in journal. Therefore, this article focused on the traditional medicinal

practices used for the treatment of piles and diabetes mellitus in Oyo State, Nigeria.

2. Methodology

2.1 Study Area

Oyo state was established in 1976 from the defunct Western Region, with the total estimated population of 6,617,720 people [2] mainly Yoruba people. The land area is 28,454km^2, ranking 14th in the country. The landscape consists of old hard rocks and dome shaped hills, which rise gently from about 500 meters in the southern part and reaching a height of about 1,219 metre above sea level in the northern part. The indigenes are mainly Oyo, Ibadan, Oke-Ogun and Ibarapa peoples, and notable cities include Ibadan (the State capital), Oyo, Ogbomosho, Saki, Okeho, Iseyin, Kishi, Eruwa and many others. The state is divided into thirty-three Local Government areas. Greater parts of the state fall within Guinea savanna, while Ibadan is classified as a derived savannah. The southern fringes of the state are still being dominated by tracts of rainforests. Oyo state is located in Southwest region of Nigeria (Figures 1 and 2) between latitude 8˚00 N and longitude 4˚00 E. The main indigenous occupation of the people is farming, while arts and crafts are popular in Oyo town.

Fig 1: Map of Nigeria showing Oyo State

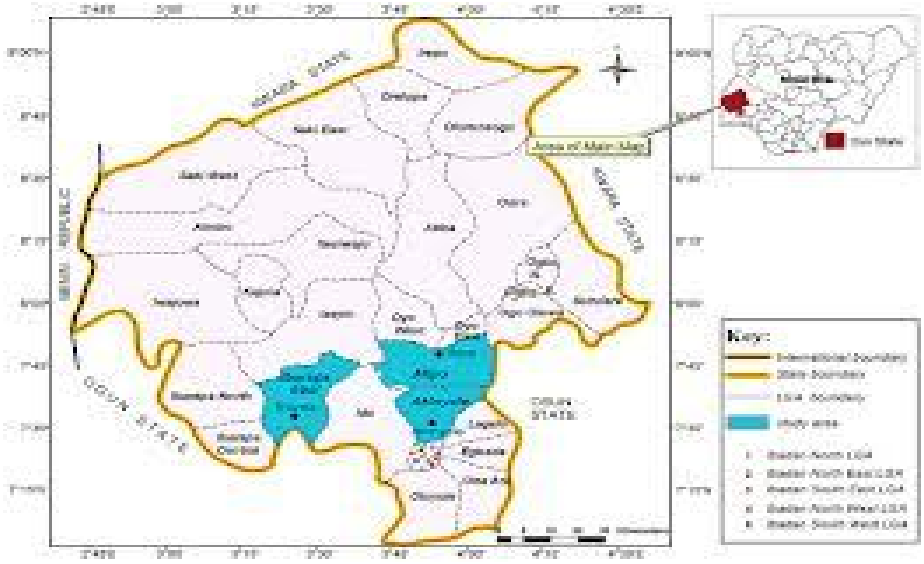

Fig 2: Map of Oyo State, Nigeria

The areas visited during this study include Saki (Saki West LGA), Sepeteri (Saki East LGA), Apata (Ido LGA), Oyo (Atiba LGA), Ikoyi (Orire LGA), Ayetoro (Kajola LGA), Karimu village, Abule Tapa (Iwajowa LGA), Idi-Ayunre, Buso-gboro (Oluyole), Iseyin (Iseyin LGA), Fiditi (Afijio LGA), Ebedi and Modeke (Oorelope LGA), Ayepe (Oriire LGA), Bode (Ibadan South East LGA) and Idere (Ibarapa Central LGA).

2.2 Ethnobiological Survey

The main data sources consisted of a series of semi – structured and open-ended questionnaires as well as informal interviews administered on local herb sellers, hunters, herbalists and other groups of people rich in traditional medicine knowledge. The administration of questionnaires and informal interviews were done for three years, between November 2008 and January 2012. This involved repeated visits to the selected respondents in the areas visited. The questionnaire administration and interviews were done in their native language (Yoruba language), while the information gathered was sorted, the local names of plants mentioned were interpreted to their respective biological names using the publication by Gbile and Soladoye[3] and other relevant previously published research papers.

3. Results

The result is a compendium of traditional medicine practice in Oyo state compiled over a period of three years, with focus on women's health.

3.1 Respondents' Identity

Table 1 indicated that a total of 31 people were interviewed for traditional medicine practice in Oyo state, 13 of which were males while the remaining 18 were females. All the herb sellers interviewed were women and in addition, majority (21) of the respondents was within the age range of 40 and 50 (Table 1). The occupations of the respondents include a Government civil service retiree, 16 herb sellers, 10 herbalists, 2 herb collectors and a hunter (Table 1). Only 1 of the respondents was a University graduate, majority (18) were illiterates, while the rest were primary school leaver or drop-outs and secondary school leavers (Table 1). Furthermore all, except the retired civil servant, claimed that they inherited their vocation from their parents, and possibly their ethnomedicinal knowledge as well. It should be noted that all the respondents were Yoruba speaking people of Oyo state.

Table 1: Demographic data of the respondents on the traditional medicinal practices for the treatment of piles and diabetes mellitus in Oyo State, Nigeria

S/N	Demographic information	Frequency (n=31)	Percentage
1	Gender		
	- Male	13	41.9
	- Female	18	58.1
2	Age category (years)		
	- Below 30	0	0
	- 31-40	0	0
	- 41-50	21	67.7
	- 51-60	5	16.1
	- 61-70	2	6.5
	- Above 70	3	9.7
3	Highest level of education		
	- No formal	18	58.1
	- Primary	10	32.3
	- Secondary	2	6.4
	- Diploma	0	0
	- Degree	1	3.2
4	Main Occupation		3.2

	- Hunter - Civil servant/retired - Herb seller - Herb collector - Herbalist/Priest/Priestess	1 2 16 2 10	6.4 51.6 6.4 32.3

3.2. Ethnobiological Survey

A total of 17 traditional medicinal practices were described for the treatment of diabetes mellitus, while 30 herbal recipes were described treating piles in this study (Table 2). In addition, 19 plants were described as being used for the treatment of diabetes mellitus, while 40 plants were listed for making herbal recipes for the treatment of piles (Table 3). In addition, only 1 animal – lizard's eggs – and 9 other ingredients (Table 4) were described as being used in the preparations of traditional remedies for the treatment of piles and diabetes mellitus in Oyo State. Prominent among the plant species mentioned for the treatment of diabetes mellitus are *Vernonia amygdalina* and *Ocimum gratissimum*; while *Ocimum gratissimum, Vernonia amygdalina* and *Allium sativum* were the most frequently mentioned plant species for the treatment of piles in Oyo State.

Combined, a total of 50 plant species were mentioned as part of the botanical ingredients for the preparation of herbal recipes for the treatment of piles and diabetes mellitus in Oyo State, Nigeria (Table 3). These 50 plants spread across 33 plant families; with Cucurbitaceae having the highest (4) number of species representatives, followed by Liliaceae, Combretaceae, Caesalpiniaceae and Malvaceae, each with 3 species representatives (Table 3).

Oral administration was the only mode of administration of the herbal treatment for diabetes mellitus in the study areas in Oyo State, while oral administration and topical application were employed for the treatment of piles (Table 2). Similarly, the method of preparation varied widely, which include infusion, decoction, maceration, squeezing, burning, boiling (in water), soaking, grinding/pounding, drying and pulverization into powder and many other variant methods (Table 2).

Table 2: Ethnobiological survey of traditional medicinal treatments for piles and diabetes mellitus in Oyo State, Nigeria

S/N	Disease	Plants, parts used, preparation and dosage
1	Diabetes mellitus	Blend *Picralima nitida* seeds to full two milk tins, add *Cocos nucifera* water. Take four spoons three times daily after meal to treat diabetes mellitus
		Squeeze the leaves of *Ocimum gratissimum*, *Vernonia amygdalina* and *Azadirachta indica* with water and filter. Blend *Picralima nitida* seeds, *Allium sativum* rhizomes, *Allium ascalonicum* bulbs and little potash. Mix everything together. Adult should take three spoons, three times daily after meal to treat diabetes mellitus
		Boil *Morinda lucida* roots and drink a cup to treat diabetes mellitus
		Boil *Vernonia amygdalina* and drink a cup once daily to treat diabetes mellitus
		Rinse *Vernonia amygdalina* leaf and eat raw to treat diabetes mellitus
		Boil and eat *Xanthosoma sagittifolium* corm to treat diabetes mellitus
		Cook and eat prepared *Triticum aestivum* flour to treat diabetes mellitus
		Squeeze and drink *Brassica oleracea* leaves to treat diabetes mellitus
		Cook and eat mature and unripe *Musa sapientum* fruit or make flour out of it and eat to treat diabetes mellitus
		Eat *Solanum aethiopicum* leaves as vegetables to treat diabetes mellitus
		Boil and drink seed and root of *Thaumatococcus danielli* to treat diabetes mellitus
		Squeeze out the leaf juice from *Vernonia amygdalina*, *Allium ascalonicum* and *Ocimum gratissimum* leaves, add little potash and soak in a bottle. Take a glass

		cup full each in the morning, afternoon and night to treat diabetes mellitus
		A cup of maceration of *Ageratum conyzoides* whole plant is taken twice daily to treat diabetes mellitus
		A cup of decoction of *Momordica charantia* plant taken orally twice daily to treat diabetes mellitus
		Soak *Moringa oleifera* leaves in boiled water for few minutes and drink the water regularly/repeatedly for some weeks to treat diabetes
		Squeeze *Ocimum gratissimum* leaf and *Viscum album* in water and mix together. Take a glass cup of the mixture three times daily to treat diabetes mellitus
		Squeeze the leaf extracts of *Vernonia amygdalina* and *Ocimum gratissimum* with water, add *Allium sativum* rhizomes, little potash and *Citrus aurantifolia* fruit juice. Take a glass cup three times daily to treat diabetes mellitus
2	Severe pile and associated gastro-intestinal disorders, Anal prolapsed/ haemorrhoids	Cut *Citrullus lanatus* fruit into pieces, add *Allium sativum* bulbs, *Picralima nitida* seeds, *Allium ascalonicum* and soak everything with local gin for one day. Adult should take two spoons and Children should take one spoon before breakfast to treat pile
		Squeeze and drink *Ocimum gratissimum* leaves twice daily to treat pile
		Boil *Senna alata* leaves and drink twice daily to treat pile
		Squeeze and drink *Momordica charantia* leaves twice daily to treat pile
		Squeeze and drink *Vernonia amygdalina* leaves twice daily to treat pile
		Cut and eat immature *Carica papaya* fruit with the peels to treat pile twice daily to treat pile
		A cold infusion of *Jatropha gossypifolia* leaves and *Ocimum gratissimum* leaves and add a pinch of salt. one cup full for adult and half cup for children twice daily to treat pile
		An infusion of *Jatropha gossypifolia* leaves, *Parquetina nigrescens* leaves, *Vernonia amygdalina* leaves and *Ocimum gratissimum* leaves in cold water. This treatment is only for adults. The patient to take one glass cup full twice daily.
		Squeeze small *Ocimum gratissimum* leaves, *Hibiscus acetosella* leaves, *Gossypium hirsutum* leaves, *Vernonia amygdalina* leaves, *Jatropha gossypifolia* leaves, small salt and *Momordica charantia* leaves. Squeeze all without using water and drink the extracted juice to treat pile once a day
		A cold infusion of leaves of *Ocimum gratissimum* and *Carica papaya*. A cup full for adults and half cup for children for as long as the symptoms persist twice daily to treat pile
		Colocynthis citrullus bulb, *Ananas comosus* fruit peel and *Cassia alata* leaves are boiled in fermented corn extract for thirty mins. A spoonful of the extract is taken by children three times daily, adult take a glass cup full early in the morning to treat pile
		Make a cold infusion of *Jatropha curcas* leaves and add salt to it. Half cup is taken by children, a full cup is taken by adults twice daily to treat pile
		Bark of *Pteleopsis suberosa*, *Dialium guineensis* roots, *Eugenia aromatica* fruits, *Piper guineense* fruits, potash and *Allium sativum* cloves. Boil everything for three hours in water. Take a cup early in the morning to treat pile
		Slice *Kigelia africana* seeds into pieces and grind with *Pterocarpus osun* fruit paste, *Aframomum melegueta* seeds and soak in gin. A teaspoon full for child, two tablespoon for adult twice daily to treat pile
		Squeeze the leaves of *Ocimum gratissimum*, *Carica papaya* and *Vernonia amygdalina*. Take a glass cup of it twice daily.
		Bark of *Aristolochia ringens*, *Picralima nitida* and *Senna fistula*, as well as *Gongronema latifolium* leaves, *Lannea welwitschii* bark and *Allium sativum* bulb, menthol and seeds of *Xylopia aethiopica*, *Acacia nilotica*, *Terminalia avicenniodes* twigs (small branches) and *Anogeissus compressus* twigs (small branches) are all soaked in a bottle of water. Take half a glass cup of the herbal

		preparation twice daily to treat pile and associated back ache
		Squeeze a large quantity of *Sida acuta* leaves with salt. Take half a glass cup in the morning, before eating and another in the evening to treat pile
		Mix *Vernonia amygdalina* leaf juice with *Citrus aurantifolia* fruit juice and *Citrus sinensis* fruit juice and take it for two weeks to treat pile
		Slice and eat *Solanum tuberosum* corms raw for five days to treat pile
		Squeeze out the leaf extracts of *Vernonia amygdalina* and *Ocimum gratissimum*, and add *Citrus aurantifolia* fruit juice and drink for fourteen days to treat pile. This can be alongside eating raw *Solanum tuberosum* corms
		Burn *Cucurbita maxima* root with one *Aframomum melegueta* rhizome. Put the powder on "waji's cloth" and push the anus in with it and leave the cloth overnight.
		Insert *Ocimum gratissimum* leaf into the anus before going to bed every night
		Squeeze *Momordica charantia* leaves and add a pinch of salt and drink
		Insert *Momordica charantia* leaf into the anus at night before going to bed
		Trim the leaf edges of *Aloe vera* and insert the leaf in the anus overnight
		Insert *Allium sativum* rhizomes into any vegetable oil and insert into anus overnight
		Roots of *Aristolochia ringens*, fruits of *Piper guineense* are all grinded and soaked in aromatic schnapps to form a thick paste. Tie *Xylopia aethiopica* fruit with white and black thread, dip into the paste and apply to the anus
		Barks of *Lannea welwitschi* and *Aristolochia ringens*, and potash and *Eugenia aromatica* bark are all boiled. Take a cup twice daily to treat haemorrhoids
		Grind sugar to become homogenized and mix with native soap. Apply on the anus till the prolapsed anus goes in
		Fry lizard eggs in red palm oil till the egg breaks in the frying pan, stir together and insert the anus once daily.

Table 3: List of plants used for the treatment of piles and diabetes mellitus in Oyo State, Nigeria

S/N	Plant Name	Family	Local name/Common name	Part used
1	*Acacia nilotica* (Linn.) Wild ex. Del.	Mimosaceae	Booni, Acacia	Seed
2	*Aframomum melegueta* (Rosc.) K. Schum.	Zingiberaceae	Atare, alligator pepper	Fruit
3	*Ageratum conyzoides* L.	Asteraceae	Imi-esu, goat weed	Flower, leaf, leaf sap, whole plant
4	*Allium ascalonicum* L. Backer	Liliaceae	Alubosa elewe, Leafed onion, Shallot, wild onion	Bulb
5	*Allium sativum* L.	Liliaceae	Ayuu, garlic	Rhizome
6	*Aloe vera* Linn.	Liliaceae	Eti-erin, Aloe vera	Leaf, leaf gel
7	*Ananas comosus* (Linn.) Merrill.	Bromeliaceae	Ope-oyinbo, pineapple	Fruit
8	*Anogeissus leiocarpus* (DC.) Guill & Perr.	Combretaceae	Ayin, axlewood	Bark
9	*Aristolochia ringens* Vahl	Aristolochiaceae	Akogun, Dutchman's pipe	Bark
10	*Azadirachta indica* A. Juss	Meliaceae	Dongoyaro, neem tree	Leaf, bark, seed oil
11	*Brassica oleracea* Linn.	Cruciferae	Cabbage	Leaf
12	*Carica papaya* Linn.	Caricaceae	Ibepe, pawpaw	Seed, sap, leaf, leaf extract, fruit
13	*Citrullus lanatus* (Thunb.)	Cucurbitaceae	Bara, water melon	Fruit

	Matsum. & Nakai			
14	*Citrus aurantifolia* (Christm.) Swingle	Rutaceae	Osan wewe, Lime fruit	Fruit, leaf
15	*Citrus sinensis*	Rutaceae	Osan, sweet orange	Fruit
16	*Cocos nucifera* L.	Arecaceae	Agbon, coconut tree	Coconut water
17	*Colocynthis citrullus* (L.) Schrad	Cucurbitaceae	Egunsi bara, bitter gourd, Colocynth	Bulb
18	*Cucurbita maxima* Duchesne	Cucurbitaceae	Elegede, pumpkin	Leaf, root
19	*Dialium guineensis* Willd.	Caesalpiniaceae	Awin, black tamarind	Root
20	*Elaeis guineensis* Jacq.	Arecaceae	Igi ope, oil palm tree	Fruit oil
21	*Eugenia aromatica* (L.) Baill	Myrtaceae	Kanafuru, cloves	Bark, fruit
22	*Gongronema latifolium* Benth.	Asclepiadaceae	Madunmaro, Utazi	Root, leaf
23	*Gossypium hirsutum* Linn.	Malvaceae	Owu, cotton plant	Leaf, seed
24	*Hibiscus acetosella* Welw ex. Hiern	Malvaceae	Akese, African Rosemallow	Leaf
25	*Jatropha curcas* L.	Euphorbiaceae	Lapalapa funfun, physic nut	Leaf, seed, root
26	*Jatropha gossypifolia* Linn.	Euphorbiaceae	Lapalapa pupa, red physic nut	Leaf
27	*Kigelia africana* (Lam.) Benth.	Bignoniaceae	Pandoro, Sausage tree	Seed, root, fruit, bark
28	*Lannea welwitschii* (Hiern) Engl	Anacardiaceae	Opon, orira, Lannea	Bark
29	*Momordica charantia* Linn.	Cucurbitaceae	Ejinrin-were, bitter gourd	Leaf, fruit, whole plant
30	*Morinda lucida* Benth.	Rubiaceae	Oruwo, brimstone tree	Leaf, root
31	*Moringa oleifera* Lam.	Moringaceae	Ewe-igbale, horse radish tree	Leaf, seed, flower, root
32	*Musa sapientum* Linn.	Musaceae	Ogede agbagba, Plantain	Fruit, sap
33	*Ocimum gratissimum* L.	Lamiaceae	Efinrin, Basil	Leaf, scent
34	*Parquetina nigrescens* (Afzel.) Bullock	Asclepiadaceae	Ogbo, African Parquetina	Leaf
35	*Picralima nitida* (Stapf.) Th. & H. Dur.	Apocynaceae	Abere, Picralima	Seed, root, bark
36	*Piper guineense* Schum & Thonn.	Piperaceae	Iyere, black pepper	Fruit, bark
37	*Pteleopsis suberosa* Engl. & Diels.	Combretaceae	Okuku,	Bark
38	*Pterocarpus osun* Craib.	Papilionoideae	Osun, Bloodwood	Bark, leaf
39	*Senna alata* L. Roxburgh	Caesalpiniaceae	Asunwon oyinbo, candle bush	Leaf, flower
40	*Senna fistula* L.	Caesalpiniaceae	Aidan tooro/lawale, Golden shower	Root, bark
41	*Sida acuta* Burm. f.	Malvaceae	Osepotu, Broom weed	Root, leaf
42	*Solanum aethiopicum* L.	Solanaceae	Efo gbagba, African egg plant	Leaf
43	*Solanum tuberosum* L.	Solanaceae	Irish potatoes	Corm
44	*Terminalia avicennioides* Guill. & Perr.	Combretaceae	Idi	Twigs/stem
45	*Thaumatococcus danielli* (Benn.) Benth.	Marantaceae	Ewe-iran, miracle berry	Root, seed
46	*Triticum aestivum* L.	Poaceae	Wheat	Flour
47	*Vernonia amygdalina* Del.	Asteraceae	Ewuro, bitter leaf	Leaf
48	*Viscum album* L.	Loranthaceae	Afomo, mistletoe	Whole plant

49	*Xanthosoma sagittifolium* (L.) Schott.	Araceae	Isu koko, cocoyam	Corm
50	*Xylopia aethiopica* (Dunal) A. Rich	Annonaceae	Eru, Ethiopian pepper	Seed, fruit, bark

Table 4: List of other ingredients (non-plants materials) encountered in the study

Native soap	Potash
Gin/local gin/schnapps	Waji's cloth (see Figure 3)
Black thread	White thread
Fermented corn extract	Sugar
Salt	

Fig 3: Photograph showing "Waji's cloth" one of the ingredients used in the treatment of piles in Oyo State

4. Discussions

Diabetes mellitus is a heterogeneous group of disorders characterized by abnormalities in carbohydrate, protein, and lipid metabolism. There are two major types of Diabetes mellitus; insulin dependent Diabetes mellitus (IDDM) type I and Non-Insulin Dependent Diabetes mellitus (NDDM) type II. The type I occur in young people usually below 35 years of age while the type II occur in older people usually above 35 years old and often overweight. In type I, the pancreas cannot make insulin so the patient must be treated with insulin in the absence of which they cannot survive, since insulin cannot be orally administered, the patient receive insulin injections once or twice a day. On the other hand, in type II, the pancreas does make insulin, but the body cannot use the insulin properly [4]. In this case, the patient is treated with oral medication. However, during periods of stress or infection, they may need short term insulin treatment. However, in more cases, the person who has diabetes would complain of feeling thirsty and passing large quantities of urine [5]. Effects of uncontrolled diabetes include: inability to see clearly, recurrent boils on the skin, leg ulcers that fail to heal, frequent urination, loss of flesh, inordinate appetite, constant hunger, mental depression, progressive weakness, great thirst and dry tongue [6]. The patient could be restless, irritable and morose. It is most helpful to conduct a test for a patient and get a doctor's diagnosis to confirm that such patient is diabetic or not.

According to the 2004 estimates of the Diabetes Association of Nigeria (DAN), the diabetics' population in Nigeria was about 10 million [7]. Diabetes mellitus is known to affect 3% on average of adult Nigerians [8]. The WHO estimated the disease in adults was about 173 million in 2000, twothirds of which live in developing countries [9]. The prevalence of diabetes mellitus is on the increase worldwide and it is still expected to increase by 5.4% in 2025 [10].

In Nigeria, most diabetes mellitus patients consult traditional medical practitioners (TMPs) to

manage their health condition [11]. Currently there are no available data on the role and status of traditional medicine practice in the management on diabetes mellitus in Nigeria [11]. The average number of patients treated yearly by the 75 TMPs is about 3,000 and this number is significant if we consider the total number of TMPs treating patients nationwide [11]. This is the very reason why the documentation of medicinal plants used to treat diabetes mellitus is important. Etuk *et al.*.[12] documented 34 medicinal plants used by the Herbalists in the Northwestern, Nigeria for the treatment of diabetes mellitus; with *Mangifera indica* and *Vernonia amygdalina* as well as *Allium sativum* ranked highest based on Informant consensus. Furthermore, Abo *et al.* [13] identified 31 plants used by traditional healers to treat diabetes mellitus in Southwest Nigeria; while Gbolade [14] documented 50 herbal recipes for treating diabetes mellitus in Lagos state, Nigeria, comprising 49 plant species, of which 14 were also mentioned in this study. It is interesting to note that even up to India, *Allium sativum* and *Momordica charantia* were recognised as major plants for treating diabetes mellitus [15].

Piles, also called Haemorrhoids, is caused by increased pressure in the veins of the rectum or anus resulting from straining when trying to have a bowel movement or any activity causing straining, such as heavy lifting. As pressure increases, blood pools in the veins, increases and this causes them to swell thus stretching the surrounding tissue [16]. Haemorrhoids can be inside and/or outside the anus and they are not dangerous as suggested by Slezak and Hutch [17]. Internal Haemorrhoids may be located near the beginning of the anal canal or close to the anal opening. When it protrudes outside the anal opening, they are referred to as prolapsed haemorrhoids. Duke [18] pointed out clearly that about one quarter of all Africans has had haemorrhoids at age 50 and that 50% to 85% of the World population could be affected by haemorrhoids at some time in their life. Pile affect both sexes but the impact on males appear to be more of concern because of its effect on their sexual performance. This disease appears to be genetically inherited as some children suffer this ailment. Humans are prone to Haemorrhoids because the erect posture of man puts a lot of pressure on the veins in the anal region [19]. According to Treben [20], overeating and presence of unassimilated bulk foods are also known to cause haemorrhoids as well as intoxicating liquors, artificial flavoring or spices, white bread, cakes, all other white flour products, fried foods, sugar and all mineral drinks. A total of 144 plant species belonging to 58 different families were gathered from the survey conducted by Soladoye *et al.* [21] for the treatment of haemmorhoids in Southwest Nigeria, 24 of which were also documented in this study.

Majority of the herbal recipes were observed to be polyherbal. Polyherbal therapy is said to be a current pharmacological principle having the advantage of producing maximum therapeutic efficacy with minimum side effects [22]. According to Tiwari and Rao [23], polyherbal therapies have the synergistic, potentiative, agonistic/antagonistic pharmacological agents within themselves that work together in a dynamic way to produce therapeutic efficacy with minimum side effects. Furthermore, *Vernonia amygdalina* and *Ocimum gratissimum* were the most prominent among the plant species mentioned for the treatment of diabetes mellitus while *Ocimum gratissimum, Vernonia amygdalina* and *Allium sativum* were the most frequently mentioned plant species for the treatment of piles in Oyo State. It is interesting to note that the same plants were most frequently mentioned for the two different diseases. This could be attributed to the fact that both diseases are sugar-related. In addition, the hypoglycemic and antidiabetic effects of *Vernonia amygdalina* has been previously reported by Okolie *et al.*[24], Akah *et al.* [25], Iwuji *et al.* [26], Fashola *et al.*[27], Owen *et al.* [28], Modu *et al.*[29] among many other authors. In the same vein, the hypoglycemic properties of *Ocimum gratissimum* was reported by Mohammed *et al.* [30], Arfa and Rasheed [31] and Oguanobi *et al.* [32] among others; Eidi *et al.*.[33], Thomson *et al.* [34], Ojo *et al.*. [35] and Eyo *et al.* [36] and many others reported the hypoglycemic effects of *Allium sativum*.

5. Conclusions

In addition to the documentation of traditional medicinal practices used for the treatment of piles and diabetes mellitus in the study areas, this study have provided the ethnomedicinal foundation for the pharmacological properties of notable medicinal plants and their therapeutic effects on piles and diabetes mellitus. This study further strengthened the relationship between indigenous knowledge, ethnomedicinal practices, drug discovery and pharmacology.

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