



ETHNOMEDICAL SURVEY OF SOME OF THE PLANTS USED FOR PAIN MANAGEMENT IN LOKOJA, KOGI STATE, NIGERIA

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ABSTRACT

This research is to evaluate the traditional pain management or treatment using plants in Lokoja. An ethnomedical survey on medicinal plants/recipes used in pain management was conducted between March and August, 2013 in Lokoja, Nigeria. Information on indigenous medicinal plant wealth of the people was obtained using a scientifically structured questionnaire with key people who are recognized in alternative/traditional medicine. Pain is called 'oyizi', 'uwo' and 'irora', in Ebira, Igala and Okun languages/dialects respectively. The Ebira, Igala and Okun are the dominant tribes living in Lokoja where the survey was conducted. The investigation yielded a total of 23 medicinal plant species represented by 23 genera from 17 families cited by 52 informants. Testing using Chi-square statistical test at 5% level of significance, there was significant difference between the actual interviews conducted and collection rate depending on the differences in the sites where the interviews were conducted. The vernacular names of the plants were recorded in Ebira, Igala and Okun (the major local languages in Lokoja). From the ethnomedical survey result, Asteraceae is most represented (17%), most of the plants are wild (65%) and shrub has the largest representation (39%). The mode of administration (mostly oral or topical) and dosage-regimen were also reported. The findings in this research have provided useful information for the monograph of the plants surveyed.

Keywords: Ethnomedicine, Management, Pain, Plants, Survey

INTRODUCTION

Pain is a general health problem that may be caused by diseases and/ or injuries. It has been managed locally by various cultures and communities using traditional/plant recipes and the use of orthodox medicine for example, pentazocine, in managing pain is associated with some problems such as dizziness, stomach upset, impaired breathing and mental function (Sofowora, 2008). Orthodox medicine is more expensive, less accessible by local people and less acceptable to the body in contrast to traditional medicine (Sofowora, 2008).

The search for new analgesic agents from the huge array of medicinal plant resources is intensifying (Obute, 2005). People in Lokoja, Nigeria use plant materials/recipes for managing/treating pain. The use of traditional medicine is expanding to newer horizons and plants still remain as the novel source of structurally important compounds that lead to the development of novel drugs (Osemene, 2011). Throughout history, man has used many different forms of therapy for the relief of pain. Among them, medicinal herbs are highlighted due to their wide popular use. Examples include *Papaver somniferum* from which morphine and codeine were isolated and *Cannabis sativa* from which cannabinoid was isolated (Hassan and Ahmad, 2008). Morphine is regarded as the prototype of opiate analgesic drugs. In the relief of pain, opiates are generally considered to act on the central nervous system (CNS) exercising their effects through opioid receptors (Klawe and Maschke,

2009). Although morphine has reigned for centuries as effective painkiller, its rule has not been totally benign (Anonymous, 2009). Analgesics are medications used to relieve pain without reducing the consciousness of the patient (WHO, 2002). They work by reducing the amount of pain felt and this is generally achieved by interfering with the way the pain message is transmitted by the nerves. Analgesics do not treat the cause of the pain but they will provide temporary relief from pain symptoms (Klawe and Maschke, 2009).

MATERIALS AND METHODS

Experimental Design

This research includes the collection of information from informants and the procurement of plants used for pain management followed by the identification, preparation of herbarium samples and subsequent compilation of data and analysis.

Study Design

The survey for gathering information about plants used for analgesia in Lokoja involved visits to traditional medical practitioners, herbalists, herb sellers and individuals knowledgeable in the use of medicinal plants using a scientifically structured questionnaire. The interview was conducted in local languages with the questionnaire as a guide, using a tape recorder and/ or camera where applicable. Interpreters were incorporated where necessary.

Study Site

The areas covered include Felele, International market, Old Market, Adankolo, Lokongoma, Sarkin-Noma and Gadumo. A selected sample of (at least) ten interviews was administered in each of the sites visited.



Plate I: Location of the Seven Surveyed Areas in Lokoja, Kogi State, Nigeria

Study Population

The sample population is principally of traditional medicine practitioners (TMPs), herbalists, herb sellers, elders with knowledge on medicinal plants and their traditional uses

Data Collection

The structured questionnaire was adopted from that designed by Sofowora (2006). The method employed by Betti (2004) was adopted as a guide for the selection of useful medicinal plants. In this method, enquiry was made as to what ailments were treated by which plant species rather than which plant was used to treat which ailment. This ensures good data selection/collection; whereas the plant-ailment method (that is asking what plant is used to treat what ailment) may lead to wrong data as the healer may always find a treatment for any plant indicated. The data for this study were obtained from direct interviews, conducted between March and August, 2013 in the seven focal areas. The survey involved mainly informants between the ages of 30 and 70 years. Data acquisition was successively collected using the communicable dialects within the area in line with standard enquiry procedure on the basis of the opinion put forward by Cordell (1995).

Preparation of Herbarium Specimen

The method described by Francis (2005) was adopted. The plant samples were collected by the person who normally prepares the herbal remedy/informant, so as to avoid the collection of wrong specimens through variation in local names. The collected plants were then prepared according to standard procedures of herbarium specimen preparation and preservation as follows; both flowers and fruits (if available) were left intact, clean cut of the stem was made using a secateur, every specimen was tagged using Jeweller's tag, name or initials and a unique collection number on one side and date and site number on the other side were recorded, unnecessary twiggy shoots were cut away, the

specimens were flattened out using a press and straps, the site, habitat, habit and flower colour were recorded, the samples were made pressed and dried quickly; change in flower colour (if occurred) was noted. Photographs of some of the collected plant species were also made so as to facilitate their identification process. Final identification, authentication with voucher's numbers were made at the Herbarium unit, Department of Biological Sciences, Ahmadu Bello University, Zaria with the help of the Taxonomist of the unit. Voucher specimens were deposited for future reference.

RESULTS

The survey was conducted, data collected from the informants on plants used for pain management in Lokoja, Kogi State, Nigeria, the plant samples procured and identified, herbarium specimens prepared and subsequently data compiled.

Study Population

The studies comprise of forty traditional medical practitioners, nine herbalists/herb sellers and three elders.

Survey Data

Of the 70 interactive sessions targeted for the seven areas under study in Lokoja, 52 were successful, indicating an overall response rate of 78% (table). These 52 informants cut across several tribes which include Igala, Ebira, Okun as the major ones. Age range is 30 to 70. The population of Male (35), female (17), Herbalists (9), traditional medical healers (40), others (3).

Data Analysis

The data collected were analyzed using statistical parameters (Table 1)

Table 1: Ethnobotanical Survey and Traditional Healers in Lokoja Town

Site of Survey	Respondents		Response Rate	
	Traditional Male Age:30-70	Healers Female Age:40-70	Total	% Collection
Felele				
No. of Interviews	4	3	7	
No. of Collection	3	3	6	86
International Market				
No. of Interviews	7	6	13	
No. of Collection	6	4	10	77
Old Market				
No. of Interviews	6	5	11	
No. of Collection	5	4	9	82
Adankolo				
No. of Interviews	6	-	6	
No. of Collection	4	-	4	67
Lokongoma				
No. of Interviews	4	2	6	
No. of collection	2	2	4	67
No. of Interviews	5	1	6	
No. of collection	5	1	6	100
Sarkin-Noma				
No. of Interviews	3	-	3	
Total	35	17	52	78

A total of at least 10 interview sessions were targeted for each group or site.

Further Statistical Analysis Using Friedman Chi-square Test

Of the 52 successful interviews carried out, about 41 collections were made which represent about 79% response rate. The Friedman Chi-square was further applied to test whether there is significant difference

between the actual interviews conducted and the collection rate. The Friedman test of statistical difference between groups uses mean rank of group scores to analyze whether a meaningful difference exists due to observed differences in a set of variables as presented in the table below.

Ranks		Test Statistics ^a	
	Mean Rank	N	7
INTERVIEWS	1.93	Chi-Square	6.000
COLLECTION	1.07	df	1
		Asymp. Sig.	.014

a. Friedman Test

Source: SPSS-IBM 20

Testing at the 5% level of significance, there was a significant difference between the actual interviews

conducted and collection rate depending on the differences in the sites where the interview was conducted $\chi^2(2) = 6.00, p = 0.014$.



Plate II: *Aspilia africana* CD Adams (ASTERACEAE) Obtained from the Side of Meme River (Lokongoma).



Plate III: *Crossopteryx febrifuga* Afzell (RUBIACEAE) Obtained from Mountain Pati (Adankolo)



Plate IV: ***Desmodium velutinum* (P. Beauv.) DC (PAPILIONACEAE)** Obtained from Kogi State Polytechnic Site (Felele)



Plate V: ***Hyptis suaveolens* Poit (LAMIACEAE)** Obtained from Otokiti village



Plate VI: ***Mucuna pruriens* Linn (PAPILIONACEAE)** Obtained from the Side of River (Lokongoma)

Meme

Table2: Information on Each of the Collected Medicinal Plants (Voucher's numbers are those of Ahmadu Bello University, Zaria-Nigeria)

S/N	Scientific Name	Family	Local Ebira	Names Igala	Okun	Voucher No.	Habit	Infor-mants	Part Used
1	<i>Acanthospermum hispidum</i> . Schrank	ASTERACEAE	<i>Ovareyikoza</i>	<i>Ashaga</i>	<i>Dawgomugo</i>	900051	herb/wild	2	whole plant
2	<i>Ananas comosus</i> (Merr) L.	BROMELIACEAE	<i>Epoyivo</i>	<i>Penapulu</i>	<i>Kuku</i>	032310	shrub/cultivated	5	fruit peel
3	<i>Annona senegalensis</i> Pers	ANNONACEAE	<i>Ochiku</i>	<i>Aloko</i>	<i>Eye abo</i>	190	shrub/wild	3	Leaf
4	<i>Aspilia africana</i> C.D Adams	ASTERACEAE	<i>Owozunava</i>	<i>Abikdo</i>	<i>Yunyun</i>	1146	herb/wild	4	Leaf
5	<i>Azadirachta indica</i> A. Juss	MILIACEAE	<i>Ochitoyivo</i>	<i>Dogoyaro</i>	<i>Dogoyaro</i>	0900151	tree/cultivated	6	leaf, bark
6	<i>Calotropis procera</i> W. T. Aiton	ASCLEIADACEAE	<i>Omunu</i>	<i>Bombom</i>	<i>Bombom</i>	060723	shrub/wild	4	leaf
7	<i>Carica papaya</i> Linn	CARICACEAE	<i>Irenwa</i>	<i>Echibakpa</i>	<i>Ibekpe</i>	230510	shrub/cultivated	6	leaf, fruit peel
8	<i>Chromolaena odorata</i> Linn	ASTERACEAE	<i>Awo</i>	<i>Awo</i>	<i>Akitola</i>	102306	shrub/wild	3	leaf
9	<i>Cissus ibuensis</i> Hook	VITACEAE	<i>Eyila</i>	-	-	230410	shrub/wild	3	leaf
10	<i>Cochlospermum planchonii</i> Hook	COCHLOSPERMACEAE	<i>Evaze</i>	-	-	2759	shrub/wild	3	leaf
11	<i>Crossopteryx febrifuga</i> Afzell	RUBIACEAE	<i>Umarupa</i>	<i>Omupapa</i>	-	062307	shrub/wild	5	leaf
12	<i>Desmodium velutinum</i> (P.Beauv.) DC	PAPILIONACEAE	<i>Ema</i>	<i>Ema</i>	Ege	1553	shrub/wild	5	Leaf
13	<i>Euphorbia hirta</i> Linn	EUPHORBIACEAE	<i>Irevi uku</i>	<i>Omiakede</i>	<i>Orisa ode</i>	583	herb/wild	5	whole plant
14	<i>Ficus capensis</i> Thunb	MORACEAE	<i>Ebankoro</i>	-	-	1019	tree/wild	3	Leaf, Bark
15	<i>Hyptis suaveolens</i> Poit	LAMIACEAE	<i>Avi opari</i>	<i>Rojaanabo</i>	<i>Effon</i>	012310	herb/wild	4	whole plant
16	<i>Ipomea asarifolia</i> Linn	CONVOLVULACEAE	<i>Etana</i>	<i>Bebenesho</i>	<i>Bibehi</i>	062408	climber/wild	4	whole plant
17	<i>Mangifera indica</i> Linn	ANNACARDIACEAE	<i>Mangoro</i>	<i>Umangolo</i>	<i>Mangoro</i>	1944	tree/cultivated	6	leaf, bark
18	<i>Momordica charantia</i> Schum & Thonn	CUCURBITACEAE	<i>Avi ehi</i>	-	-	022310	climber/ wild	5	Leaf
19	<i>Morinda lucida</i> Benth	RUBIACEAE	<i>Oguro</i>	-	<i>Oliturare</i>	1862	shrub/wild	5	Leaf
20	<i>Mucuna pruriens</i> Linn	PAPILIONACEAE	<i>Idaku</i>	<i>Awabaru</i>	<i>Ehihi</i>	1588	climber/wild	5	Leaf
21	<i>Nauclea latifolia</i> Smith	RUBIACEAE	<i>Obedu</i>	-	-	1268	shrub/wild	3	Leaf, Bark
22	<i>Spilanthes filicaulis</i> Schum & Thonn	ASTERACEAE	<i>Osete</i>	<i>Oliturare</i>	-	534	shrub/wild	5	Leaf
23	<i>Uvaria chamae</i> P.Beauv	ANNONACEAE	<i>Epochi oji</i>	-	-	3129	shrub/wild	3	Leaf

Table 3: More Information on the Collected Plants

S/N	Scientific Name	Preparation	Dosage- regimen	Route of Administration	Diseases	Therapy
1	<i>Acanthospermum hispidum</i> .	Alcohol maceration is made from the leaf powder and mixed with garden egg.	2 small cup, twice daily,	Oral	meningitis, diarrhoea, cholera, typhoid	anti-diarrhoea, anticholera
2	<i>Ananas comosus</i>	An infusion is prepared by boiling	1 small cup, twice daily	Oral	fever, headache	analgesic, antipyretic
3	<i>Annona senegalensis</i>	Prepared into soup with dried fish	2 spoon, twice daily	Oral	malaria ever, pain	analgesic, antipyretic
4	<i>Aspilia africana</i>	Infusion is prepared and taken.	1 cup, twice daily,	Oral	haemorrhage,	wound healing, haemorrhage cure
5	<i>Azadirachta indica</i>	Concocted with pine apple fruit peel	twice daily	Oral	fever, pain	antiinflammatory,
6	<i>Calotropis procera</i>	Fresh leaf macerated, rubbed on part	twice daily	Topical	inflammation, malaria, leprosy	antimicrobial, analgesic, antipyretic
7	<i>Carica papaya</i>	Concocted with pine apple fruit peel	twice daily	Oral	fever	antiinflammatory
8	<i>Chromolaena odorata</i>	Fresh leaves rubbed on the painful area	Daily	Topical	leprosy	antiseptic
9	<i>Cissus ibuensis</i>	Fresh leaves rubbed on the painful area	Daily	Topical	convulsion	anticonvulsant
10	<i>Cochlospermumplanchonii</i>	Aqueous concoction with neem leaf	1 small cup daily	Oral	fever, jaundice, backache	analgesic, antipyretic
11	<i>Crossopteryx febrifuga</i>	Leaves are eaten fresh	twice daily	Oral	pain, pyrexia, malaria.	antipyretic, Analgesic, anti-inflammatory.
12	<i>Desmodium velutinum</i>	Prepared into decoction	2small cup, 3times	Oral	fever, pain	antipyretic
13	<i>Euphorbia hirta</i>	Prepared into soup with salt, red oil, and dried fish.	once daily	Oral	dysentery	Antibacterial, analgesic
14	<i>Ficus capensis</i>	Paste prepared with red oil and rubbed on the painful area.	twice daily	Topical	asthma, inflammation, fever	antipyretic, anti-plasmodic.
15	<i>Hyptis suaveolens</i>	Prepared into soup using red oil and dried fish.	twice daily	Oral	Typhoid	antibacteriae
16	<i>Ipomea asarifolia</i>	Prepared into paste and rubbed on painful fractured or dislocated area.	twice daily	Topical	fever	antipyretic
17	<i>Mangifera indica</i>	Concoction made with pine apple peel, lemon	small cup, 3 times daily	Oral	Joint pain	analgesic
18	<i>Momordica charantia</i>	Decoction and taken warm	Once daily	Oral	fever, pain	analgesic, antipyretic
19	<i>Morinda lucida</i>	Decoction prepared	1small cup twice daily	Oral	diabetes, mellitus	antihyperglycaemia.
20	<i>Mucuna pruriens</i> Linn	Prepared into paste, rubbed on painful part	Twice daily	Topical	parkinson's disease	antisplasmodic, anticancer.
21	<i>Nauclea latifolia</i>	Decocted leaf extract is mixed with red potash	1 small cup, twice daily	Oral	diabetes, cancer	analgesic, laxative
22	<i>Spilanthes filicaulis</i>	Soup prepared with dried fish	1small spoon, 3times daily	Oral	infant diarrhoea	anthelminthic, antimicrobial, antipyretic
23	<i>Uvaria chamae</i>	Decoction prepared with <i>Morinda lucida</i> and <i>Azadirachta indica</i>	1small cup twice	Oral	toothache, stomache stomache upset	analgesic, antipyretic, antibacterial, antiplasmodial

DISCUSSION

Medicinal plants are used for the management/treatment of many diseases including pain. The present study describes the identification and documentation of the medicinal plants of Lokoja, Nigeria. The survey covered 52 informants consisting of 14 informants from Igala, 13 informants from Ebira and 25 informants from Okun. Male is 35, female is 17, traditional medicine practitioners is 40, herb sellers is 9 and elders is 3 (Table 1). Testing at 5% level of significance, there was significant difference between the actual interviews conducted and collection rate depending on the differences in the sites where the interviews were conducted. From the results of the survey, traditional medicine has a long history of acceptability in Lokoja.

Traditional plant based medicines, which are used to treat and manage various health related problems particularly pain are still patronized and sought for by the majority of the rural populace. Its easy accessibility, acceptability to body systems and low cost makes it first choice of healthcare system in spite of the influence of modern medicine. These observations are in agreement with those earlier observed by the World Health Organization (WHO, 2002). The use of plants to manage health and well-being is an age long practice. Many conventional and high efficacious drugs are produced from plant sources.

The respondents revealed that pain management with these plants was mostly done using their recipes with relatively high success. It indicated that although in most cases this form of treatment was effective in managing pain and related conditions, in a situation where the sickness persisted, the patient could resort to orthodox medicine. An earlier study attested this from the documented findings on the application of both orthodox and alternative sources of medicine by rural communities (Osemene, *et al.*, 2011).

Plant habit/habitat from the collection showed that many of the medicinal plants are ubiquitously wild, herbs and shrubs. Trees are less represented as medicinal plants from Lokoja. The forest plants made up

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only 11% of the medicinal plants collected. Plant conservation was poor; as most of the informants admitted they just collect these plants from the wild, some are burnt by annual bush fire and during cultivation of farmlands. These plants have become endangered since no consideration for cultivation or preservation was observed. These findings are in agreement with those of Obute (2005).

Observation of the few medicinal plants documented during the survey show that Lokoja area has a fair distribution of medicinal plants along the huge hills and mountain reliefs surrounding the region as shown on the map. Most of the respondents lamented their ordeal in climbing the mountain to obtain medicinal plants. Because of this, such trips are usually planned before embarking on them. Some however claimed to have a huge reserve of medicinal plants with higher efficacy, including those for use as therapy against spiritual ailments.

The survey results as shown in table 2 & 3 showed recipes of the surveyed medicinal plants. Generally, most of the remedies involved a single plant with water and sometimes local drinks such as "kunu", "burukutu", palm wine etc as the common extraction solvents, either by maceration, decoction, concoction or infusion. The survey results also show that, oral method of administering traditional medicine particularly in pain management is the most popular practice in Lokoja. The mode of administration and dosage-regimen were poorly designed and regulated. This poor precision in prescription of traditional medicine has earlier been observed as its major disadvantage (WHO, 2002).

Medicinal plants have contributed greatly to traditional and orthodox medicine through the provision of ingredients for drug development.

CONCLUSION

This survey is the first of its kind on medicinal plants used for pain management/treatment in Lokoja. Some of the plants from the findings have already been scientifically evaluated. The findings in this research have provided useful information for a monograph of the plants and have validated the traditional use of the plant for pain management/treatment.