



Journal of Pharmacy & Pharmacognosy
Research

E-ISSN: 0719-4250

editor@jppres.com

Asociación de Académicos de Ciencias
Farmacéuticas de Antofagasta
Chile

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Journal of Pharmacy & Pharmacognosy Research, vol. 5, núm. 4, julio-agosto, 2017, pp.
200-216

Asociación de Académicos de Ciencias Farmacéuticas de Antofagasta
Antofagasta, Chile

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Herbal medicine: Clerics' knowledge in a sub urban center in Niger Delta, Nigeria- a pilot study

[Medicina herbaria: el conocimiento de los clérigos en un centro suburbano en el delta del Níger, Nigeria - un estudio piloto]

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Abstract

Context: Places of worship such as churches and mosques can be dissemination centers for herbal medicines. Clerics play religious and social as well as political roles in the society and so exert a profound influence on their followers.

Aims: To document the knowledge, belief, and disposition of clerics in Amassoma in Herbal Medicine as well as the medicinal plants mentioned by them.

Methods: Using semi-structured questionnaires, information was gathered through personal interviews with thirty-two (32) clerics.

Results: A total of 36 medicinal plant species representing 34 genera and 26 families were mentioned by the 32 clerics for various ailments. Approximately 85% of the clerics believed that neither the Quran, Bible nor their teaching was against the use of herbs. All the respondents have had contact with herbs, and a little above half of the population (53.1%) was highly satisfied with the results obtained from the use of herbs, while 22.0% showed low satisfaction and a quarter showed no satisfaction at all.

Conclusions: The present study has shown that the clerics can serve as a good source of disseminating information on herbal medicines to the people. They can promote herbal medicine through their knowledge of it.

Resumen

Contexto: Lugares de culto como iglesias y mezquitas pueden ser centros de diseminación de hierbas medicinales. Los clérigos desempeñan papeles religiosos y sociales, así como políticos, en la sociedad y ejercen una influencia profunda sobre sus seguidores.

Objetivos: Documentar el conocimiento, creencia y disposición de los clérigos en Amassoma en Medicina Herbaria así como las plantas medicinales mencionadas por ellos.

Métodos: La información se obtuvo a través de entrevistas personales con treinta y dos (32) clérigos usando cuestionarios semi-estructurados.

Resultados: Un total de 36 especies de plantas medicinales, que representan 34 géneros y 26 familias, fueron mencionadas por los 32 clérigos para diversas dolencias. Aproximadamente el 85% de los clérigos creían que ni el Corán, ni la Biblia, ni su enseñanza estuviera contra el uso de hierbas. Todos los encuestados han tenido contacto con las hierbas, y el 53,1% estuvo altamente satisfecho con los resultados obtenidos del uso de hierbas, mientras que el 22,0% mostró una baja satisfacción y una cuarta parte mostró ninguna satisfacción.

Conclusiones: El presente estudio ha demostrado que los clérigos pueden servir como una buena fuente de información sobre la diseminación de hierbas medicinales a las personas. Ellos pueden promover la medicina herbaria a través de su conocimiento.

Keywords: Christianity; clerics; herbal medicines; Islam.

Palabras Clave: clérigos; cristianismo; hierbas medicinales; islam.

ARTICLE INFO

Received | Recibido: December 2, 2016.

Received in revised form | Recibido en forma corregida: March 3, 2017.

Accepted | Aceptado: March 12, 2017.

Available Online | Publicado en Línea: April 30, 2017.

Declaration of interests | Declaración de Intereses: The authors declare no conflict of interest.

Funding | Financiación: The authors confirm that the project has no funding or grants.

Academic Editor | Editor Académico: Gabino Garrido.

INTRODUCTION

The use of herbs in the treatment of diseases started a long time ago, and herbal medicines have maintained their popularity for historical and cultural reasons. In developing countries, they are relied upon to meet health care needs (Abdullahi, 2011; Thorsen and Pouliot, 2015), and the resurgence of interest in the use of herbs is common globally especially in Europe and North America (WHO, 2001; Abdullahi, 2011).

Consumers have also shown a positive attitude towards these products largely due to the presumption that their natural origin makes them safe. They are also considered as part of a healthy lifestyle (Abdullahi, 2011).

Apart from exposure of college students to herbal medicines through the college curriculum (Alade et al., 2016), churches and mosques are also a means of disseminating information about herbal medicine through clerics.

Clerics are known to aid in the dissemination of information as their followers believe highly in their words and deeds. Their knowledge and use of herbal medicine will go a long way in its promotion; they play religious as well as social and political roles in the society and so exert a profound influence on their followers (Fuller and Francke, 2001). Religious documents such as Bible and Quran support the role of herbs in health care and prevention. Islamic perspective also confirms the role of herbs in diseases management and Prophet Mohammed recommended various plants/fruits in the treatment of diseases (Al-Bukhari and Al-Bukhari, 1976).

This study is therefore aimed to document the knowledge, belief, and disposition of Clerics in Amassoma in Herbal medicine as well as the medicinal plants mentioned by them.

MATERIAL AND METHODS

Study area and ethnographic characteristics

Amassoma is the head quarter of Ogboin clan as

well as Ogboin-North Rural Development Authority in the Southern Ijaw Local Government Area of Bayelsa State (Fig. 1). It is the host community to the Niger Delta University, Wilberforce Island, Bayelsa and this has brought about the upsurge in a population with many ethnic groups represented. It is located about 40 km to the South of Yenagoa; the State capital. It is on an altitude of 512 above sea level, bounded in the North by River Nun, West by Otuan, East by Toru Ebeni and the South by Ogobiri. It is the biggest town in Southern Ijaw Local Government Area. The area has a coastline of approximately 60 km on the Bight of Bonny with geographical coordinates of 4° 58' 13" North and 6° 6' 35" East. It has an area of 2,682 km² and a population of 319,413 inhabitants.

Ethnobotanical survey

Regular field tours were made between March and June, 2016 to the study area. Informants were pastors and Imams (Islamic clerics). A total of twenty-eight pastors and four imams responded. The methods used included interviews with these informants guided by a semi-structured questionnaire and observation/informal conversation on the site. Informed consent was obtained orally from all participants before the administration of the questionnaires and commencement of interview. Detailed information on the local names, plant parts used, and methods of preparation and use amongst others were documented. A collection of all plants was made as soon as the plants were indicated. They were identified and authenticated by Prof. K.K. Ajibesin of the Department of Pharmacognosy and Herbal Medicine, Faculty of Pharmacy, Niger Delta University, Nigeria. Voucher numbers were also obtained for the plants from the Herbarium of the same Institution. The participants gave the local names of the plants, while some were identified scientifically at the site. The results of the pre-tested questionnaires were used to make necessary modifications and corrections on the questionnaires and interview guides.



Figure 1. Map of the study area, Amassoma, Wilberforce Island, Bayelsa State, Nigeria (with maps of Nigeria and Bayelsa State).

Statistical analysis

Data were analyzed using descriptive statistics such as frequency and percentages. The fidelity level (FL), which is an index of the importance of a plant species for a given purpose, was determined as described by Hoffman and Gallaher (2007) and informant consensus factor (ICF), an indication of agreement of informants for a plant species in treating a particular disease was determined as described by Uddin and Hassan (2014), the values range between 0 and 1, where “1” indicated the highest level of informant consensus (Uddin and Hassan, 2014).

Fidelity level (FL) was calculated using the formula:

$$FL = \frac{Ip}{Iu} \times 100$$

where,

Ip = number of informants who cited the species for the particular use, and Iu = total number of informants that mentioned the plant for any use.

Informant consensus factor (ICF) was determined by the formula:

$$ICF = \frac{Nur - Nt}{Nur} - 1$$

where,

Nur = number of use reports from informants for a particular plant use category, and Nt = number of species that are used for that plant use category for all informants.

RESULTS AND DISCUSSION

More than a quarter (87.5%) of the respondents were of Christian clergy while the remaining were Muslim clerics. The majority of the Christians (81.3%) were affiliated to the Pentecostal fellowship of Nigeria while the Islamic clerics were distributed equally into NASFAT, NADWAT, QUAREEB and DARIKA (3.1%). Half of the respondents were in the range of 31-40 years of age, and 68.8% are married. The preponderant number of respondents within the age bracket of 31-40 years may be attributed to

their interest in medicinal plants. The age bracket was also the one dominating Christian and Muslim clergy. All the major Nigerian languages were represented and almost one-quarter (71.9%) had a minimum education level of first degree (B.Sc or its

equivalents) in addition to their theology/Arabic education in which almost 90% had opportunity of attending, and 84.4% believed that neither the Quran, Bible nor their teaching is against the use of herbs (Table 1).

Table 1. Demographical data of the study population.

Demographical data	Percentage (%)
Religion	
Islam	12.5
Christianity	87.5
Affiliation	
<i>Islam</i>	
NADWAT	3.1
NASFAT	3.1
DARIKA	3.1
QUAREEB	3.1
<i>Christianity</i>	
Pentecostal Fellowship of Nigeria (PFN)	81.3
Christian Association of Nigeria (CAN)	6.3
Age	
20-30	12.5
31-40	50.0
41-50	25
51 and above	12.5
Language	
Ijaw	34.4
Yoruba	12.5
Ibo	6.3
Hausa	6.3
Others	40.6
Marital status	
Married	68.8
Single	31.2
Others	0
Highest level of Education	
Senior Secondary Certificate of Education (SSCE)	9.4
Diploma	15.6
Bachelor of Science (BSc)	56.3
Master of Science/Philosophical Doctor (MSc/PhD)	15.6
Others	3.1
Theology/Bible School/Islamic/Arabic school	
Yes	87.5
No	12.5

This also validates the report that religious books are not against the use of plants for medicine (Al-Bukhari and Al-Bukhari, 1976). Both the Qu'ran and the Bible have been reported to include plants that have long been used for medicine (Musselman, 2000). All the respondents have had contact with herbs with 28.1% of them showing high interest. However, 28.1% of respondents showed moderate interest while 43.8% showed low. About half of the population (53.1%) were highly satisfied with the results obtained from the use of herbs, while 21.9% showed low satisfaction and a quarter showed no satisfaction at all (Table 2).

Sixty-nine percent reported that they use herbs frequently due to their perceived belief in its safety, efficacy and natural source (Table 2), but only a quarter would prefer herbal medicine to orthodox medicine, 15.6% would prefer both depending on the nature of the ailments, 6.3% would prefer none probably due to their belief in 'miraculous healing' after praying, while 53.1% would prefer modern medicine because of civilization, standardization and decent presentation of the drugs. All the plants used were from cultivated sources, which help in conservation (Table 3).

Table 2. Contact of respondents to herbal medicines.

Characteristics of respondents	Percentage (%)
Contact with herbs	
Yes	100
No	0
Level of interest	
Low	28.1
Middle	43.8
High	28.1
None	0
Frequency of herbal use	
Few	25.0
Frequent	68.8
None	6.2
Level of satisfaction	
Low	21.9
High	53.1
None	25.0
Practice	
< 5 years	0
5-10 years	22
11-20 years	78
20 and above years	0

Table 3. Knowledge of herbal medicine by the respondents.

Question	Percentage (%)
Best source of knowledge of medicinal plants in the family?	
Parents	59.4
Sister	3.1
Brother	18.8
Wife	3.1
None	15.6
Preference of system of medicine?	
Herbal medicine	25.0
Modern medicine	53.1
Both	15.6
None	6.3
Is Islam or Christian doctrine against herbal medicine?	
Yes	12.5
No	84.4
Not sure	3.1
Knowledge of medicinal plants?	
Yes	93.7
No	6.3
Source of plant?	
Cultivated around the home	100
Cultivation and wild	0
Plant identification?	
Yes	96.9
No	3.1
Preparation of herbal remedy?	
Yes	56.2
No	43.8

A total of thirty-six medicinal plant species belonging to twenty-five families was recorded in this study. The most important plant species is *V. amygdalina* with a frequency/consensus of 20/16 followed by *A. indica*, *C. papaya*, *O. gratissimum*, *C. citratus*/*M. indica* with frequencies of 15, 14, 13 and 12 and consensus of 9, 10, 15, and 7/9, respectively. All these plants were mainly employed in the treatment of fever. *Vernonia amygdalina* commonly

known as bitter leaf is a perennial shrub in the Compositae family growing well in the Tropical Africa and probably the most employed particularly for its nutritional value in the genus *Vernonia*. It is employed as anthelmintic, antimalarial, laxative, wounds/healing agent among others and all of these claims have been validated pharmacologically (Ijeh and Ejike, 2011). This plant was also indicated for some of these diseases in this study (Table 4).

Table 4. Medicinal plants mentioned by the respondents.

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Amaryllidaceae	<i>Allium sativum</i> L.	NDUP160			2		
			High blood pressure	1		R	Eat fresh or boil and regularly drink until healing or relief is achieved
			Fever	1		R	Eat fresh or boil and regularly drink until healing or relief is achieved
			Tonic	1		R	Eat fresh or boil and regularly drink until healing or relief is achieved
			Digestion	1		R	Eat fresh or boil and regularly drink until healing or relief is achieved
			Total	4			
Anacardiaceae	<i>Mangifera indica</i> L.	NDUP161			9		
			Fever	10		L, SB	Boil leaf, stem, bark separately or together and drink as needed
			Diabetes	1		L	Boil leaf and drink
			Memory enhancer	1		F	Lick fruit
			Total	12			
Arecaceae	<i>Cocos nucifera</i> L.	NDUP162			2		
			Fever	1		R	To be boiled and drunk until relief
			Poison antidote	1		F	The water is injected intramuscularly
			Total	2			
Cannabinaceae	<i>Cannabis sativa</i> L.	NDUP163			2		
			Pain	2		L	To be smoke until relief
			Total	2			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Caricaceae	<i>Carica papaya</i> L.	NDUP164			10		
			Fever	11		L, F	Steam inhalation after boiling leaf/unripe fruit, the decoction to be drunk until relief.
			Diabetes	1		L	Extract leaf with the leaf of <i>Ocimum gratissimum</i> , <i>Garcinia kola</i> seed and drink as needed
			Eczema	1		L	Apply leaf sap as needed
			Cancer	1		L	Extract leaf in boiled water
			Total	14			
Clusiaceae	<i>Garcinia kola</i> Heckel	NDUP165			3		
			Cough	2		Se	To be chewed until relief
			Total	2			
Compositae	<i>Aspilia africana</i> (Pers.) C.D Adams	NDUP166			1		
			Wound healing	1		L	Squeeze leaf and apply gently until healing is achieved
			Total	1			
	<i>Chromolaena odorata</i> (L.) R.M. King & h. Rob.	NDUP167			4		
			Wound healing	2		L	Extract juice and apply gently
			Total	2			
	<i>Vernonia amygdalina</i> Delile	NDUP168			16		
			Tonic	4		L	Extract juice and drink as needed
			Diabetes	4		L	Extract juice and drink as needed
			Fever	9		L, S	Extract in water and take when needed
			Inflammation	1		L	Extract juice and add native chalk and apply
			Constipation	1		L	Chew leaf
			Diarrhea	1		L	Extract in water and take when needed
			Total	20			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Crassulaceae	<i>Bryophyllum pinnatum</i> (Lam.) Oken	NDUP ₁₆₉			4		
			Wound healing particularly umbilical cord	2		L	Extract juice and apply until healing is achieved
			Fever	1		L	Extract juice in water and drink until relief
			Total	3			
Cucurbitaceae	<i>Telfaria occidentales</i> Hook. F	NDUP ₁₇₀			5		
			Blood boosting	4		L	Extract leaf in water and drink regularly
			Anemia	1		L	Extract leaf in water and drink regularly
			Total	5			
Euphorbiaceae	<i>Jatropha tanjorensis</i> J.L. Ellis & Saroja	NDUP ₁₇₁			1		
			Blood booster	1		L	To be taken as soup
			Total	1			
	<i>Manihot esculenta</i> Crantz.	NDUP ₁₇₂			1		
			Wound healing	1		L	Squeeze leaf and apply gently until healing is achieved
			Total	1			
Irvingiaceae	<i>Irvingia gabonensis</i> (Aubry-Lecomte ex O'Rorke) Baill.	NDUP ₁₇₃			3		
			Fever	1		Se	To be chewed until relief
			Weight loss	1		F	Extract and drink the juice regularly
			Total	2			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Lamiaceae	<i>Ocimum gratissimum</i> L.	NDUP ₁₇₄			15		
			Wellbeing	2		L	To be regularly chewed
			Head ache	1		L	Extract leaf juice and instill into the eyes
			Catarrh	1		L	Extract leaf juice and instill into the nostrils
			Fever	3		L	Extracted juice with or without salt is drunk when needed, extract in illicit gin can also be taken.
			Stomach ache	2		L	Extract in water and add salt and taken when needed
			Pile	1		L	Extract juice in water and drink regularly
			Boil	1		L	Extract juice and apply gently
			Blood booster	1		L	Extract juice in water and drink regularly
			Diarrhea	1		L	Leaf is boiled and drunk as needed
			Total	13			
Leguminosae	<i>Acacia nilotica</i> (L.) Delile	NDUP ₁₇₅	Pile	1	1	R	Boil and drink, bathe with it and sit on the hot decoction
			Total	1			
	<i>Mimosa pudica</i> L.	NDUP ₁₇₆			1		
			Headache	1		L	Boil leaf and drink until relief
			Total	1			
	<i>Senna alata</i> (L.) Roxb.	NDUP ₁₇₇			1		
			Skin rashes	1		L	Extract leaf and apply regularly
			Total	1			
	<i>Tetrapleura tetraptera</i> Taub.	NDUP ₁₇₈			2		
			Cough	1		F	To be taken as soup until relief
			Wound healing	1		F	Grind and mix with honey and apply gently until healing is achieved
			Total	2			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
	<i>Parkia biglobosa</i> (Jacq.) G.Don	NDUP179			1		
			Fever	1		L	Boil and drink
			Total	1			
Meliaceae	<i>Azadirachta indica</i> A. Juss	NDUP180			9		
			Fever	14		L, SB	Boil leaf and bark in water and take when needed
			Eczema	1		L	Squeeze leaf and rub on the affected part as needed
			Total	15			
	<i>Swietenia macrophylla</i> King	NDUP181			1		
			Boil	1		SB	To be boiled and drunk until healing is achieved
			Total	1			
Moraceae	<i>Ficus exasperata</i> Vahl	NDUP182			1		
			Gonorrhea	1		L, R	Extract in water or illicit gin and take until relief
			Total	1			
	<i>Ficus sycomorus</i> L.	NDUP183			1		
			Pile	1		R	Add milk to powdered root and drink regularly
			Total	1			
	<i>Milicia excelsa</i> (Welw.) C.C. Berg	NDUP184			2		
			Arthritis	2		SB	Boil the bark and drink until relief
			Boil	1		SB	Apply exudate gently until healing is achieved
			Total	3			
Moringaceae	<i>Moringa oleifera</i> Lam.	NDUP185			3		
			Diabetes	1		L	Boil and drink regularly
			High blood pressure	1		L	Boil and drink regularly
			Ulcer	1		L	Boil and drink regularly
			Fever	1		L	Boil and drink regularly
			Sexual dysfunction	1		L	Boil and drink regularly
			Wound	1		L	Crush the leaf and apply on the wound until healing is achieved
			Total	6			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Musaceae	<i>Musa x paradisiaca</i> L.	NDUP186			1		
			High blood pressure	1		SB	Extract sap and drink regularly
			Tonic for newly delivered mother	1		L	Boil leaf and bathe with it
			Total	2			
Myrtaceae	<i>Psidium guajava</i> L.	NDUP187			4		
			Fever	6		L, SB	Boil leaf or stem separately and drink as needed
			Stooling	1		L	Leaf is boiled and drunk as needed
			Pain	1		L	
			Total	8			
Piperaceae	<i>Aframomum melegueta</i> K. Schum.	NDUP188			1		
			Sexual potency (man power)	1		F, Se	To be regularly chewed
			Total	1			
Poaceae	<i>Cymbopogon citratus</i> DC Stapf	NDUP189			7		
			Well being	2		L	Boil leaf and drink regularly
			Fever	10		L	Boil leaf and drink when needed, boiled with <i>Carica papaya</i> leaf and <i>Citrus x aurantifolia</i> juice
			Catarrh	1		L	Leaf boiled and inhaled
			Total	12			
	<i>Pennisetum purpureum</i> Schumach.	NDUP190			1		
			Fever	1		L	Boil leaf and drink until relief
			Total	1			
Ponteridaceae	<i>Eichhornia crassipes</i> (Mart.) Solms.	NDUP191			1		
			Fever	1		L	Boil and take as tea
			Total	1			

Table 4 (continued...)

Family	Plant	Voucher	Uses	Frequency	Responders	Part	Method of preparation
Rutaceae	<i>Citrus x aurantifolia</i> Burn. F.	NDUP192			1		
			Fever	1		F	Juice boiled with <i>Carica papaya</i> leaf and <i>Cymbopogon citratus</i> leaf and taken until relief.
			Stomach trouble	1		F	Juice to be taken until relief
			Total	2			
	<i>Citrus x sinensis</i> Osbeck	NDUP193			2		
			Fever	1		L	Boil leaf and drink as needed
			Source of vitamin C	1		F	Lick fruit
			Total	2			
Solanaceae	<i>Solanum melongena</i> L.	NDUP194			1		
			Body pain	1		F	To be regularly chewed
			Total	1			
Theaceae	<i>Camellia sinensis</i> (L.) Kuntze	NDUP195			1		
			Fever	1		L	Drink the infusion of leaf until relief
			Total	1			
Xanthorrhoeaceae	<i>Aloe vera</i> (L.) Burm. F.	NDUP196			1		
			Cancer	1		L	Take the juice regularly
			Skin infection	1		L	Apply juice until healing is achieved
			Total	2			
Zingiberaceae	<i>Zingiber officinale</i> Roscoe	NDUP197			2		
			General well-being	1		Rh	Boil and drink regularly, grind and take regularly
			Cough	1		Rh	Grind and mix with honey and take three times daily
			Catarrh	1		Rh	Grind and mix with honey and take three times daily
			Total	3			

N=32. L: Leaf, R: Root, SB: Stem bark, F: Fruit, S: Stem, Se: Seed, Rh: Rhizome.

The most important disease category was fever with a use report of seventy four (74), followed by gastrointestinal tract (11), internal disease (10) and tonic (9). Out of the aforementioned categories of

ailments, fever had the highest informant consensus factor (ICF) of 0.73, while gastrointestinal tract, internal disease and tonic had ICF of 0.30, 0.33 and 0.38, respectively (Table 5).

This shows that the level of agreement among the clerics of this area for use of plants to treat fever is the highest. Also, this is an indication that the species used for fever are worth investigating especially for their biologically active secondary metabolites, which can be leads for newer drugs for the treatment of various types of fever. Eighteen medicinal plant species were mentioned for fever of which *A. indica* was most mentioned (18.92%) with a fidelity level (FL) of 100% followed by *C. papaya* (14.86%), *C. citratus* (13.51%), *M. indica* (13.51%) all of which had a fidelity level of 100% each, and *V. amygdalina* (12.16% and FL of 56) (Table 6). The fidelity level is an indication of the level of cultural importance of medicinal species in a society.

All these plants have been mentioned for this same purpose worldwide. *Azadirachta indica* commonly referred to as neem is extensively cultivated in the Indian subcontinent (Tiwari et al., 2014) and has been employed by man to manage and treat various diseases such as fever, pains, and infections since time immemorial (Kumar and Navaratnam, 2013). It contains many constituents such as nimbin, nimbidin,

nimbolide, and limonoids, and these play a role in diseases management through modulation of various genetic pathways and other activities. The anti-malarial activity of the extracts using *Plasmodium berghei* infected albino mice showed that neem leaf and stem bark extracts reduced the level of parasitemia in infected mice by about 51-80% and 56-87%, respectively (Akin-Osanaiya et al., 2013). It has been shown that azadirachtin and other limonoids are the antimalarial principles (Dhar et al., 1996; Mulla and Su 1999; Nathan et al., 2005). Its role as the health-promoting effect is attributed to its rich antioxidant effect (Alzohairy, 2016). The infusion of the leaf of *C. papaya* is taken as tea for the treatment of malaria (Aravind et al., 2013). The essential oil of *Cymbopogon citratus* was reported to elicit 86.6% suppression of the growth of *Plasmodium berghei* when compared with chloroquine (taking inhibition by chloroquine as 100%) (Tchoumboungang et al., 2005; Shah et al., 2010; 2011; Manvitha and Bidya, 2014). The most prevalent families were Leguminosae (13.8%) and Compositae (8.3%) followed by Rutaceae, Poaceae, Meliaceae and Euphorbiaceae (5.6%) (Table 7).

Table 5. Categories of diseases.

Category of disease	Number of use report for disease category	Number of species (Nt)	Informant consensus factor (ICF)
Fever	74	18	0.77
Pain/inflammation	8	7	1.00
Gastrointestinal tract	11	8	0.30
Skin disease	7	7	0
Sexually transmitted diseases	1	1	0
Internal medicine	10	7	0.33
Weight loss	1	1	0
Memory enhancer	1	1	0
Poison antidote	1	1	0
Wound healing	6	6	0
Tonic	9	6	0.38
Respiratory	7	5	0.33
Blood building/anemia	6	3	0.60
Reproduction	1	1	0
Nutritional supplement	1	1	0

Table 6. Plants cited for fever.

Plant	Frequency (%)	Fidelity level (%)
<i>Allium sativum</i> L.	1 (1.35)	50
<i>Azadirachta indica</i> A. Juss	14 (18.92)	100
<i>Bryophyllum pinnatum</i> (Lam.) Oken	1 (1.35)	25
<i>Camellia sinensis</i> (L.) Kuntze	1 (1.35)	100
<i>Carica papaya</i> L.	11 (14.86)	100
<i>Citrus x aurantifolia</i> Burn. f.	1 (1.35)	100
<i>Citrus x sinensis</i> Osbeck	1 (1.35)	50
<i>Cocos nucifera</i> L.	1 (1.35)	50
<i>Cymbopogon citratus</i> DC Stapf	10 (13.51)	100
<i>Eichhornia crassipes</i> (Mart.) Solms.	1 (1.35)	100
<i>Irvingia gabonensis</i> (Aubry-Lecomte ex O'Rorke) Baill.	1 (1.35)	33
<i>Mangifera indica</i> L.	10 (13.51)	100
<i>Moringa oleifera</i> Lam.	1 (1.35)	33
<i>Ocimum gratissimum</i> L.	3 (4.05)	20
<i>Parkia biglobosa</i> (Jacq.) G.Don	1 (1.35)	100
<i>Pennisetum purpureum</i> Schumach.	1 (1.35)	100
<i>Psidium guajava</i> L.	6 (8.11)	100
<i>Vernonia amygdalina</i> Delile	9 (12.16)	56
Total	74	

The Leguminosae majorly referred to as the legume, pea, or bean family, is a huge, economically and medicinally relevant family among flowering plants. It comprises trees, shrubs and herbaceous plants, which are either perennials or annuals and recognizable by their legume characteristic and compound leaves. It is extensively distributed and is reported to be the third-largest land plant family next to only Orchidaceae and Compositae, comprising 730 genera with more than 19,400 species (Judd et al., 2002; Stevens, 2006; Mahbubur and Parvin, 2014). The Leguminosae is the most abundant family occurring in tropical rainforests of Africa (Burham and Johnson, 2004). Compositae was also mentioned as an important family in the Niger Delta ethnomedicine (Ajibesin et al., 2011, Alade et al., 2016) and in different tribes of Bangladesh (Hossan et al., 2010). The most prevalent plant parts were the leaf mentioned 97 times and stem bark (46 times). Others were fruit, seed, root

and rhizome that were mentioned 10, 4, 2 and 2 times, respectively (Fig. 2).

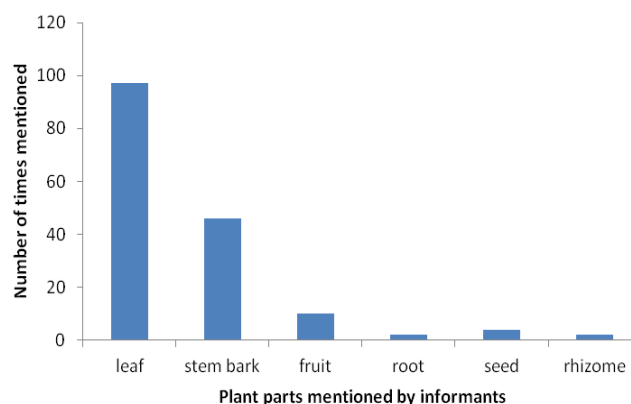
**Figure 2.** Plants parts mentioned by clerics.

Table 7. Plants family.

Family	Number of species cited (%)
Anacardiaceae	1 (2.8)
Arecaceae	1 (2.8)
Cannabinaceae	1 (2.8)
Carricaceae	1 (2.8)
Clusiaceae	1 (2.8)
Compositae	3 (8.3)
Crassulaceae	1 (2.8)
Cucurbitaceae	1 (2.8)
Euphorbiaceae	2 (5.6)
Irvingiaceae	1 (2.8)
Lamiaceae	1 (2.8)
Leguminosae	5 (13.9)
Meliaceae	2 (5.6)
Moraceae	2 (5.6)
Moringaceae	1 (2.8)
Musaceae	1 (2.8)
Myrtaceae	1 (2.8)
Piperaceae	1 (2.8)
Poaceae	2 (5.6)
Ponteridaceae	1 (2.8)
Rutaceae	2 (5.6)
Solanaceae	1 (2.8)
Theaceae	1 (2.8)
Xanthorrhoeaceae	1 (2.8)
Zingiberaceae	1 (2.8)
Total	36

CONCLUSIONS

The present study has shown that the clerics can serve as a good source of disseminating information on herbal medicines to the people. They embrace herbal medicine, their religions do not oppose its use and they are knowledgeable in medicinal plants especially those that are employed for the prevention and treatment of fever. They can promote herbal medicine through their knowledge of it.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENT

The authors express their gratitude to Pastors Moses Polycarp and Raphael Eze of the Living Faith Church Worldwide, Amassoma and the chief Imam of Amassoma in Bayelsa State.

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Author contribution:

Contribution	Alade GO	Ajibesin KK
Concepts or ideas	X	X
Design	X	X
Definition of intellectual content	X	X
Literature search	X	X
Experimental studies	X	X
Data acquisition	X	X
Data analysis	X	X
Statistical analysis	X	X
Manuscript preparation	X	X
Manuscript editing	X	X
Manuscript review	X	X

<p>Citation Format: Alade GO, Ajibesin KK (2017) Herbal medicine: Clerics' knowledge in a sub urban center in Niger Delta, Nigeria- a pilot study. J Pharm Pharmacogn Res 5(4): 200-216.</p>
