



A Survey of Plants Used in the Treatment of Ante-Natal and Post-Natal Disorders in Nneochi Local Government Area of Abia State, Nigeria

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ABSTRACT

This study evaluated plants in homesteads employed in the treatment of ante-natal and post-natal disorders in four communities within Nneochi Local Government Area of Abia State, Nigeria. A total of 18 plant species belonging to 12 families were found to be used in the handling of pregnancy-and post-pregnancy-related issues including infertility, breast lump, placenta delivery, womb cleansing, milk production, anaemia, miscarriage, umbilical wound, among others. Plant remedies were prepared mostly as infusions or decoctions from different plant parts using water, palm-wine, gin, stout beer and soft drinks. The diversity, species richness and abundance of the medicinal plants varied among the sampled communities. Similarity in the identified plant species composition between communities also varied and ranged from 50 – 79%; indicating varying levels of knowledge of their medicinal attributes, cultivation and usage. Conservation and laboratory screening of the species are suggested to complement global efforts towards a drastic reduction in child and maternal mortality.

Keywords:

Ethnomedicine, pregnancy, child and maternal mortality, Eastern Nigeria

INTRODUCTION

Many women die each year from cases related to pregnancy and childbirth despite incessant claims of a positive turning point in the battle to keep mothers alive during pregnancy and childbirth. WHO (2012) reported that globally, maternal mortality had fallen by 47% between 1990 and 2010, observing that the overall aim of MDG 5 (a 75% reduction) is very unlikely to be achieved by 2015 unless there are remarkable further reductions from 2011 to 2015. Developing countries account for 99% of the global maternal deaths with the majority of the deaths in sub-Saharan Africa and Southern Asia. At the country level, India (contributing 19%) and Nigeria (contributing 14%) account for one third of global maternal deaths (WHO 2012). Maternal health has become a critical topic in global development.

Maternal ill health and death impact families, communities and societies and has far reaching effects across socio-economic strata. Lack of skilled and motivated staff as well as inadequate drugs and equipment in inadequate health centres have been identified as the major factors responsible for maternal and child deaths. These challenges are more in the rural areas where local people hardly have access to modern medical facilities. Though public health centres were established in both rural and urban areas in Nigeria with the intention of equity and easy access, regrettably, the rural populations in Nigeria are seriously underserved when compared with their urban counterparts (Abdulraheem et al., 2012). The need for increased access to care and insurance coverage is especially crucial for rural populations because they receive less preventive care and have higher rates of all chronic diseases than their urban counterparts (Bailey, 2010).

However, plant materials have continued to play a major role in primary health care especially in the developing countries. Herbal medicine is the oldest form of healthcare known to mankind and over 50% of all clinical drugs are of natural products origin, and natural products play important roles in drug development in the pharmaceutical industry (Preethi et al, 2010).

Although, available literature parades an avalanche of published materials on medicinal plants and claims on their efficacies in the treatment of various ailments, none has focused exclusively on

medicinal plants used in the treatment of ante-natal and post-natal disorders which are chiefly responsible for child and maternal mortality. Due to paucity of modern health facilities, the rural dwellers in Nneochi Local Government Area rely heavily on traditional medicine for remedies to various ailments. This paper focuses on local approaches to the treatment of ante-natal and post-natal disorders in Nneochi Local Government area of Abia State, Nigeria with a view to providing knowledge that will complement efforts at tackling the menace of pregnancy – and birth- related ailments.

Given the alarming rate of deforestation in various parts of the globe including Nigeria, and the concomitant loss of species (including medicinal plants), the study went beyond the conventional ethno-medicinal survey to include the evaluation of populations of the identified plant species relevant to the subject matter, at the homestead level, with a view to providing information that will enhance their conservation. It is hoped that the conservation and laboratory screening of these species may achieve results that will corroborate global efforts towards a drastic reduction in child and maternal mortality.

METHODOLOGY

Description of the study area

The study was carried out in Nneochi Local Government Area of Abia State. Abia State occupies 584sqkm. It is bounded on the north and northwest by Anambra, Enugu and Ebonyi States. To the west is Imo State, and the east and south-east are Cross-Rivers and Akwa Ibom States; to the south is Rivers State. It has an annual rainfall of 2400mm. The area is characterized by tropical wet climate usually from the month of March to October and dry climate usually from November to March. The most important Rivers in Abia State are the Imo and Aba Rivers which flow into the Atlantic Ocean through the Niger Delta (www.abiastate-ng.com). Abia State has seventeen (17) Local Government Areas (LGAs) of which Nneochi Local Government Area is one. The population of Nneochi L.G.A. is 163, 928 (as at the 2006 Census) and the major occupation of the people are trading and farming. Figure 1 is the Map of Abia State showing the study area.

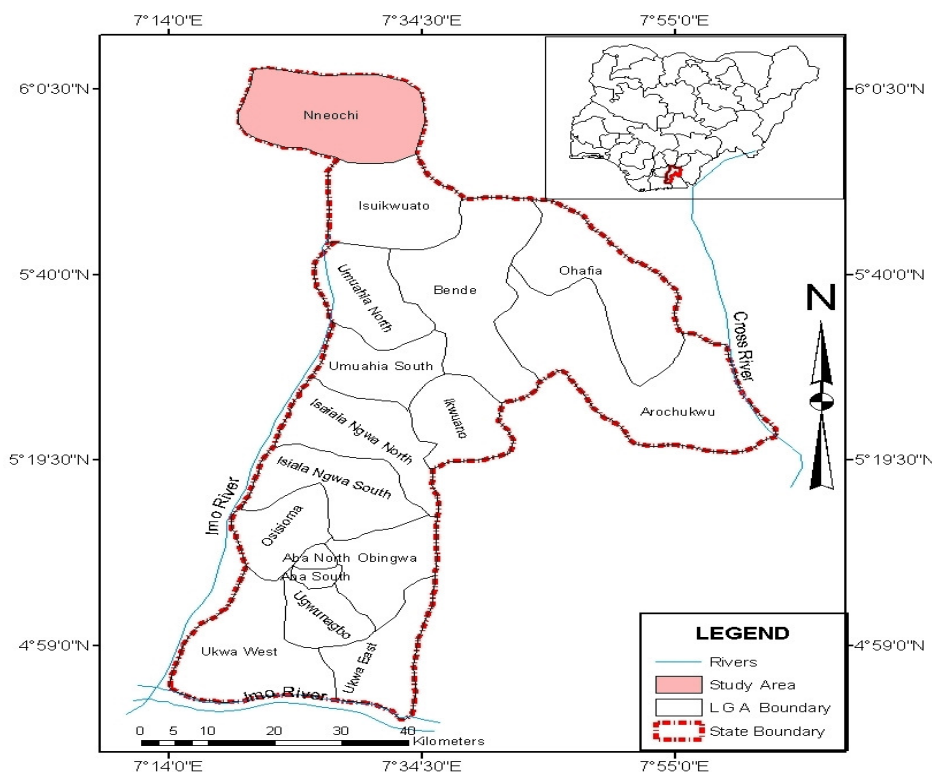


Figure 1: Map of Abia State showing the Study Area

Selection of Study Sites

Multistage sampling procedure was used in selecting the study sites. In the first stage of sampling, four (4) communities were randomly selected. In the second stage of sampling, three (3) villages were randomly selected from each of the communities. In the third stage of sampling, ten (10) compounds were randomly selected from each village for visiting. This gave a sample size of 120 compounds.

Data Collection

Data for the study were collected mainly through oral interview and field enumeration. In each compound visited, information sought from the head of the compound and recorded included: The plant species used to treat pregnancy-related-and-post-natal ailments and their local names; number of each of such plant species encountered and their habits; parts of the plant species used as medicines; method of preparation; and the form in which they are taken for medication.

Data Analysis

Measurement of medicinal plant species diversity within communities

Simpson diversity index (Simpson, 1949) was used to measure the diversity of plant species used for treating ante-natal and post-natal disorders in each of the four communities.

- Simpson's Index is expressed as:

$$D = \frac{\sum ni(ni - 1)}{N(N - 1)}$$

Where:

ni = the number of individuals in the ith species.

N = the total number of individuals counted.

Since Simpson's Index as expressed above has an inverse relationship with diversity (i.e. the lower the index, the higher the diversity and *vice versa*), the diversity of communities based on the Simpson's index was expressed as $(1 - D)$, to allow for a direct relationship with diversity.

Measurement of similarity in medicinal plant species between communities

Sorensen's similarity index was used to ascertain the level of similarity in medicinal plant species composition between each pair of the communities. The computation of Sorensen's similarity index in this

study followed the method of Margurran (2004) as expressed below:

$$SI = 2a / \{2a + b + c\}$$

Where:

a = number of species present in both communities under consideration

b = number of species present in community 1 but absent in community 2.

c = number of species present in community 2 but absent in community 1

The Paleontological Statistics (PAST) software was also used to obtain a hierarchical classification of the communities using Sorensen's similarity indices such that communities with very high similarity cluster together while those that are dissimilar are far apart.

RESULTS

Species used in the treatment of ante-natal and post-natal disorders in the study area

The plant species used to treat ante-natal and post-natal disorders in the communities are shown in Table 1. A total of 18 plant species belonging to 12 families were enumerated. The species were mainly trees and herbs, and are used to treat specific cases like infertility, breast lump, placenta delivery, womb cleansing, difficulty with breast-milk production, anaemia, miscarriage, umbilical wound, among others (Table 2). Parts of the plants used include leaf, stem, pod, spadix and seed.

Table 1: Checklist of plant species used in treating ante-natal and post-natal disorders

S/No.	Botanical name	Common name	Igbo name	Family	Habit
1.	<i>Bryophyllum pinnatum</i> (Lam) Oken	Africa never die plant	Odunduafuoweya/ Odaopuo	Crassulaceae	Herb
2.	<i>Centrosema pubescens</i> Benth	Beans	Akidi	Leguminosae – Papilionaceae	Herb
3.	<i>Cnestis feruginae</i> Vahl ex DC	-	Amunkita	Connaraceae	Herb
4.	<i>Commelina africana</i> L	Lions claw	Mboagu	Commelinaceae	Herb
5.	<i>Elaeis guineensis</i> Jacq	Palm tree	Nkwu, Akwu	Arecaceae	Tree
6.	<i>Eleusine indica</i> (L) Gaertn	Wire grass, fowl foot	Ichite	Poaceae	Herb
7.	<i>Emilia sonchifolia</i> (L.) DC. ex Wight	-	Ntiele	Asteraceae	Herb
8.	<i>Euphorbia kamerunica</i> Pax	-	Udo-ogwu	Euphorbiaceae	Herb
9.	<i>Ficus exasperata</i> Vahl	Sandpaper	Wagiriwa	Moraceae	Tree
10.	<i>Ficus thonningii</i> Blume	-	Obu, okpoto	Moraceae	Tree
11.	<i>Jatropha gossypifolia</i> L	Wild cassava	Mbo ogwu	Euphorbiaceae	Shrub
12.	<i>Kigelia africana</i> (Lam) Benth	Sausage tree	Uda agu	Bignoniaceae	Tree
13.	<i>Mallotus oppositifolius</i> (Geiseler) Müll.Arg	Indian kamila	Kpokoko	Euphorbiaceae	Tree
14.	<i>Senna occidentalis</i> (L) Link	-	Nchummuo	Leguminosae-Caesalpinaceae	Tree
15.	<i>Telferia occidentalis</i> Hook. f.	Fluted pumpkin	Ugu	Cucurbitaceae	Herb
16.	<i>Tetrapleura tetraptera</i> Taub	-	Ohiohio	Leguminosae – Mimosaceae	Tree
17.	<i>Vitellaria paradoxa</i> (Gaertn f.) Hepper	Shea butter	Oguma	Sapotaceae	Tree
18.	<i>Xylopia aethiopica</i> (Dunal) A. Rich	Guinea pepper	Uda	Annonaceae	Tree

Table 2: Specific cases treated by different species, parts used, methods of preparation and administration

S/N	SPECIES	USES	PARTS USED	PREPARATION	ADMINISTRATION
1.	<i>Bryophyllum pinnatum</i> (Lam) Oken	Umbilical wound healing	Leaf	The leaves are squeezed, and blanched in some cases.	Juice from the squeezed leaves is applied to a newly born baby's umbilical cord daily for five days.
2.	<i>Centrosema pubescens</i> Benth	Womb cleansing after delivery	Pod	The pod is prepared as pepper soup	The soup is taken twice daily by the woman who just delivered.
3.	<i>Cnestis feruginea</i> Vahl ex DC	Prevention of miscarriage	Root	The root is cut into pieces and boiled in water.	The decoction (10cl) is taken to stabilise pregnancy.
4.	<i>Commelina africana</i> L	Treatment of softness of core of the head in babies, and infertility in women	The whole plant	The plant juice is extracted by squeezing or pounding the leaves/roots. The plant parts can also be boiled in water.	The squeezed plant juice is applied topically on the soft-core of the head of a baby to harden it. The decoction is drunk to enhance fertility in women.
5.	<i>Elaeis guineensis</i> Jacq.	Prevention of miscarriage	Spadix, root	The fresh spadix is cut into pieces and cooked together with the root.	The water (20cl) from the cooked flower and root is taken daily from conception to the day of delivery.
6.	<i>Eleusine indica</i> (L) Gaertn.	Abortion	Leaf	The leaves are boiled with water and the water used to make 'eba'	The 'eba' is eaten with soup.

				(Garri from cassava soaked in hot water).	
7.	<i>Emilia sonchifolia</i> (L.) DC. ex Wight	Confirmation of pregnancy	Leaf, stem	The leaves and stem are boiled in water or soaked in alcohol.	The boiled water or alcoholic extract (5cl) is given to a woman to confirm if she is pregnant.
8.	<i>Euphorbia kamerunica</i> Pax	Placenta delivery	Leaf	The leaves are squeezed and the juice extracted with water	10cl of the extract is given to the woman who delivers immediately for the removal of placenta.
9.	<i>Ficus exasperata</i> Vahl	Breast milk booster	Leaf	The leaves are squeezed and the juice extracted with palm-wine after soaking for an hour.	50cl of the decoction is taken 3 times daily every 3 days.
10.	<i>Ficus thonningii</i> Blume	Treatment of sour-breast- milk	Leaf	The leaves are cut into pieces and soaked in about 2 litres of palm-wine.	The palm wine decoction of leaves (20-40cl) is drunk daily for 2 weeks in the case of sour breast milk.
11.	<i>Jatropha gossypifolia</i> L	Treatment of softness of core of the head in babies, placenta delivery	Leaf	The leaves are squeezed	The leaf-juice is rubbed on the soft part of the baby's head and it hardens after 7 days. About 10cl juice is also drunk by the woman having difficulty in delivery of placenta.
12.	<i>Kigelia africana</i> (Lam) Benth.	Fibroid, infertility in women	Root	The root is cut into pieces and boiled in water. Also the leaves of <i>Newbouldia laevis</i> are boiled with the roots for conception.	It is taken 10cl twice daily.
13.	<i>Mallotus oppositifolius</i> (Geiseler) Müll.Arg	Infertility	Leaf, root	Leaves/roots ground, cooked in water and filtered, or cut into pieces and soaked in gin.	Taken 10-20cl daily.
14.	<i>Senna occidentalis</i> (L) Link	Inability to produce breast milk	Leaf	The leaves are pounded and a pinch of salt is added to it with pepper. It is then moulded into small balls and sundried.	The balls (with roasted groundnut) are eaten by a breastfeeding mother having difficulty in milk production.
15.	<i>Telfairia occidentalis</i> Hook. f.	Anaemia	Leaf	The leaves are blanched, cut into pieces and steamed, or squeezed and the juice mixed with stout or Malta drink.	The steamed leaves are eaten with rice or alone while the decoction is taken 1 cup full twice daily.
16.	<i>Tetrapleura tetraptera</i> Taub.	Womb cleansing	Pod	The pod is cooked with leaves of <i>Ocimum gratissimum</i> , <i>Piper guineense</i> and salt.	A small quantity of the soup is taken twice daily for a month to cleanse and set the womb.
17.	<i>Vitellaria paradoxa</i> (Gaertn f.) Hepper	Breast lump	Seed	The seed is heated on fire.	The heated seed is placed on the lump on daily bases till the lump dissolves.
18.	<i>Xylopia aethiopica</i> (Dunal) A. Rich.	Womb cleansing	Fruit pod	The pod is slashed with a cutlass and cooked with other spices in form of soup.	The soup is taken twice daily.

Populations of plant species used in the treatment of ante-natal and post-natal disorders within homesteads

The populations of the enumerated species are shown in Table 3. Within communities, species populations

ranged from 0 – 60 in Amuda, 0 – 270 in Mbala, 0 – 45 in Nneato and 0 – 35 in Umuaku. Across communities, species populations ranged from 1 for *Vitellaria paradoxa* to 290 for *Centrosema pubescens*. The highest number of individuals was found in Mbala, followed by Amuda, Umuaku and Nneato respectively.

Table 3: Populations of plant species used in the treatment of pre-natal and post-natal disorders in the four communities

Species	Population				Total
	Amuda	Mbala	Nneato	Umuaku	
<i>Bryophyllum pinnatum</i>	52	26	10	18	106
<i>Centrosema pubescens</i>	20	270	0	0	290
<i>Cnestis feruginae</i>	4	0	0	0	4
<i>Commelina africana</i>	0	7	0	0	7
<i>Elaeis guineensis</i>	11	21	14	35	81
<i>Eleusine indica</i>	15	0	0	0	15
<i>Emilia sonchifolia</i>	4	2	6	4	16
<i>Euphorbia kamerunica</i>	12	48	0	12	72
<i>Ficus exasperata</i>	0	4	1	0	5
<i>Ficus thonningii</i>	2	4	0	0	6
<i>Jatropha gossypifolia</i>	15	8	0	4	27
<i>Kigelia africana</i>	3	1	0	3	7
<i>Mallotus oppositifolius</i>	0	2	0	0	2
<i>Senna occidentalis</i>	5	7	1	0	13
<i>Telferia occidentalis</i>	60	30	45	25	160
<i>Tetrapleura tetraptera</i>	0	0	2	4	6
<i>Vitellaria paradoxa</i>	0	1	0	0	1
<i>Xylopia aethiopica</i>	1	2	0	0	3
Total	204	433	79	105	821

Diversity of plant species used in the treatment of ante-natal and post-natal disorders in different communities

The within community diversity indices are shown in Table 4. Species richness was highest in Mbala,

followed by Amuda, Umuaku, and Nneato respectively. However, medicinal plant diversity was highest in Amuda, followed by Umuaku, Nneato, and Mbala respectively.

Table 4: Medicinal plant species diversity indices for different communities

	Amuda	Mbala	Nneato	Umuaku
Species richness	13	15	7	8
Simpson 1 - D	0.82	0.587	0.6214	0.7846

Similarity in ante-natal and post-natal medicinal plant species composition between communities

Table 5 shows the level of similarity in ante-natal and post-natal medicinal plant species between communities. The highest similarity was observed between Amuda & Mbala; followed by Amuda & Umuaku and Nneato & Umuaku; Mbala & Umuaku;

Mbala & Nneato; and Amuda & Nneato, respectively. Figure 2 shows the hierarchical classification of the communities based on their similarities in medicinal plant species composition. Mbala and Amuda showed a closer association on one hand while Umuaku and Nneato showed a closer association on the other hand.

Table 5: Sorensen's similarity indices for the four communities

	Amuda	Mbala	Nneato	Umuaku
Amuda	*	0.79	0.50	0.67
Mbala		*	0.55	0.61
Nneato			*	0.67
Umuaku				*

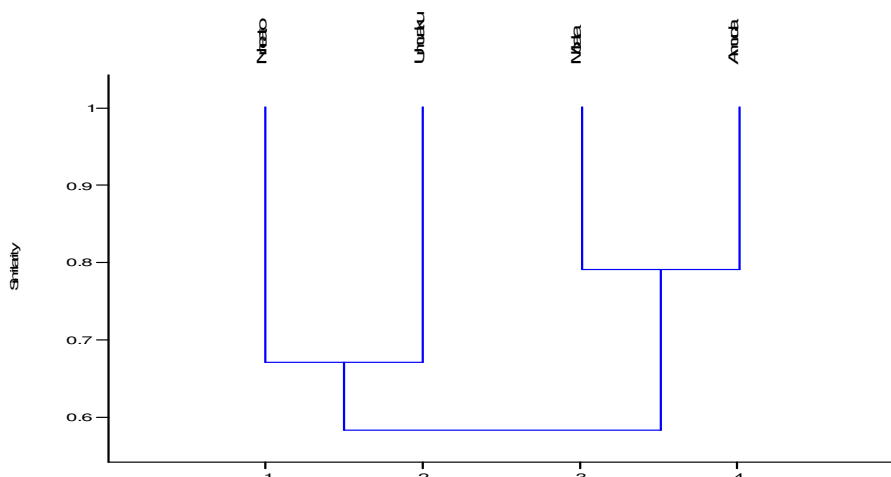


Figure 2: Cluster dendrogram classification of communities based on Sorensen's similarity indices

DISCUSSION

Given the far-reaching consequences of maternal and child mortality, there has been a global battle for some time now to keep mothers and children alive during pregnancy and child birth. This global concern has been well captured in the Millennium Development Goals (MDGs) of the United Nations. However, many women and children continue to die each year from cases related to pregnancy and child birth.

The challenges of maternal and child mortality are more in the rural areas where medical facilities are either lacking or grossly inadequate. This study has shown that the rural people of Nneochi rely heavily on herbal medicine to handle ante-natal and post-natal disorders which are chiefly responsible for maternal and child mortality. Traditional herbal remedies provide health services even in highly industrialized setups because they are important pillars of culture and human socialization (Owuor et al., 2005).

Medicinal plant species diversity was higher in Amuda community than in the other communities though, medicinal plant species richness and abundance were higher in Mbala than in the other communities. This implies that the medicinal plants in Amuda were more evenly distributed among the species present than in the other communities. The lowest diversity in Mbala despite its highest species richness and medicinal plant populations is attributable to high species dominance. It should be noted that only one species – *Centrosema pubescens*, accounted for 62% of the total medicinal plant populations in Mbala Community. Ambasht and Ambasht (2008) noted that species diversity accounts for not only the number of species in a community (i.e. species richness) but also the evenness in the distribution of the individuals among the species present; and that species dominance reduces diversity. Looking at the cluster dendrogram, Mbala and Amuda showed a closer association on one hand while Umuaku and Nneato showed a closer association on the other

hand. This implies that Mbala and Amuda have a very close ecological distance with respect to their medicinal plant species composition and the same thing applies to Umuaku and Nneato.

The differences in species richness, diversity, abundance and similarity of these species across communities in the study area are indicative of varying levels of awareness and knowledge of their medicinal attributes. This underscores the need to conduct similar surveys in as many rural areas as possible in order to document and disseminate information on the subject matter. Okello *et al.* (2010) observed that change in lifestyle has impacted negatively on the maintenance of traditional knowledge on herbal remedies; hence the danger of it being lost. Moreover, knowledge in traditional treatment has been observed to be on the decline due to the death of aged traditional healers (Cox and Balick, 1994).

The need for appropriate authorities to encourage the conservation of these medicinal plants of importance *ex situ* at homesteads given the high spate of deforestation in many parts of the developing countries including the study area is emphasized. It is hoped that further laboratory and clinical investigations of these species may achieve results that will corroborate global efforts towards a drastic reduction of child and maternal mortality.

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