OPEN ACCESS International Journal of Applied Biology

ISSN : 2580-2410
eISSN : 2580-2119

Some Plants Used for Reproductive Health by Women in Agbarha-Otor Community, Delta State

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Abstract

Overtime, the state of maternal health in Nigeria is poor and can be attributed to inadequate access to reproductive health services, poverty and in some areas, cultural resistance. Medicinal plants used in Agbarha-Otor, Ughelli, Nigeria for managing women's reproductive health during pregnancy, birth and post-partum were investigated in this study. Surveys were conducted using semi structured questionnaire as well as guided field-walks where respondents, specifically, Traditional Birth Attendants (TBAs), were interviewed. A total of 30 plants belonging to 23 families having properties against different conditions, ailments and peculiarities relating to gynaecological conditions in women were documented. Most of the documented plants belong to Asteraceae family. Also, most of the reported plants were majorly herbs and shrubs which were surveyed plants from the wild. Leaves were the most frequently used plants' part. Most of the medications were prepared as decoctions and mostly administered orally. From the survey, it can be deduced that the use medicinal plants for reproductive healthcare and gynaecological conditions in the study area is still in practice. Scientific validation of the biological properties of the surveyed plants is highly advocated and cultivation of medicinal plants to minimize the pressure on wild species is also recommended.

Article History
Received May 19, 2022
Accepted December 14, 2022

Keyword
Reproductive health;
traditional birth attendants;
traditional maternal healthcare;
medicinal plants;
Agbarha-Otor

Introduction

Healthcare services in Nigeria are often inadequate and unevenly distributed with only a small number of healthcare facilities provide antenatal care, delivery and postnatal services. This deficiency has really contributed to the extremely high maternal mortality ratio, which is among the highest in the world. WHO (2012), reported that maternal mortality ratio in Nigeria is 630 per 100,000 live births, which places the country as the country with the tenth highest mortality ratio. Nigeria and other five countries account for almost half (49%) of the overall maternal mortality figure worldwide according to Hogan et al. (2010). This unprecedented figure cannot be disassociated from the fact that most Nigerian women employ the services of alternative traditional healthcare through the services of Traditional Birth Attendants

(TBAs) and Traditional Healers (THs), who inevitably use medicinal plants for maternal healthcare, particularly in rural areas where orthodox health facilities are either absent or extremely difficult to access.

The utilization of plants and their resources for combating various ailments predates written history and they are still in use all over the world (Abe and Ohtani, 2013). Aihiokhai et al. (2019) reported that phytochemical analysis of plant extracts has shown the presence of some secondary metabolites which is responsible for their immense medicinal value. However, medicinal plants are widely used for pre and postnatal care in many parts of the world (Zumsteg and Weckerle, 2007); thus, various studies have documented many medicinal plants used to treat obstetric and gynecological conditions, such as birth control, complications during pregnancy and child birth and problems associated with infertility (Abdillahi and Van Staden, 2013). Indigenous people worldwide have used oral traditions and empirical means to compile detailed knowledge regarding the use of medicinal plants, and this information is disseminated from generation to generation (Abel et al., 2005).

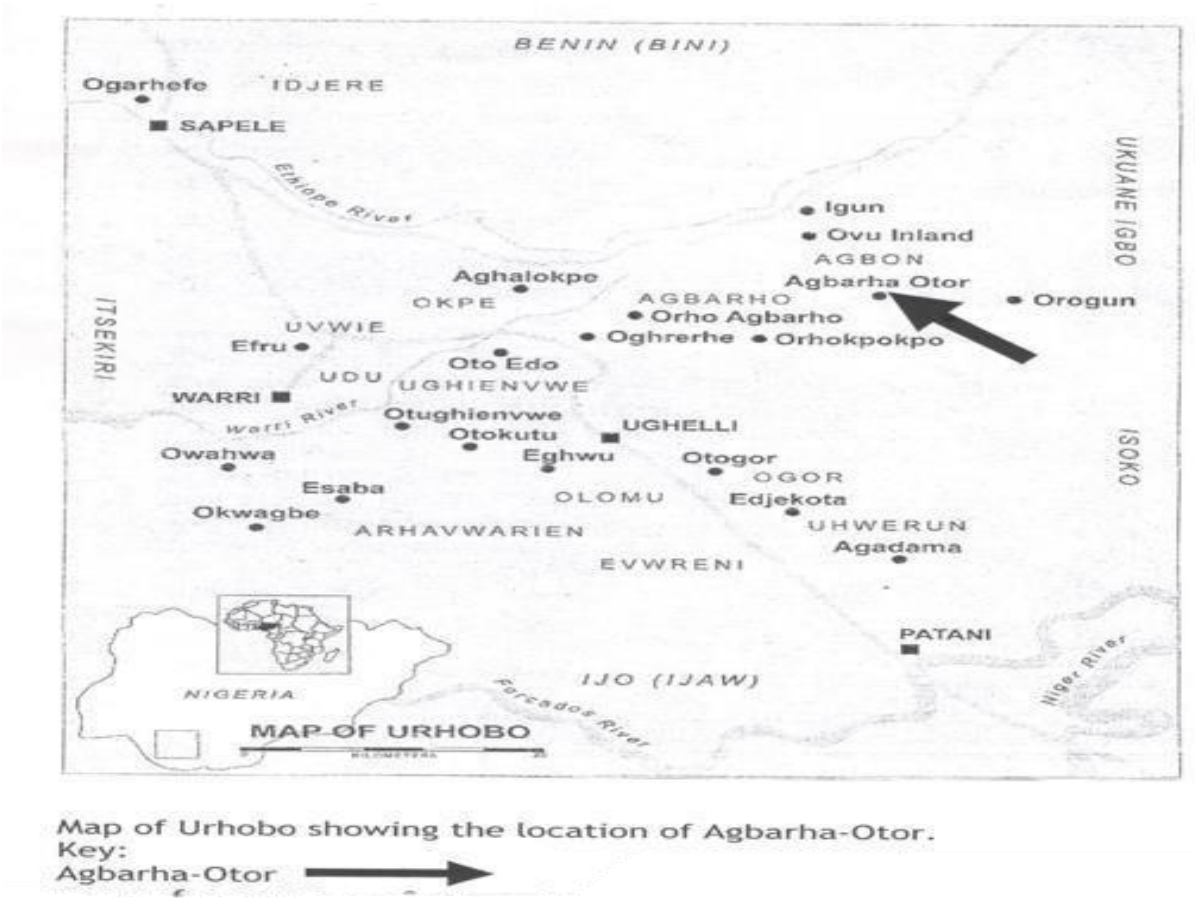
Delta State is one of the oil producing states in Nigeria, that is among the Niger Delta States in the country. Culturally, the state houses majorly the Anioma, Urhobo, Ijaw, Isoko and Itsekiri ethnic people. The study area, Agbarha-Otor community is made up of the Urhobo speaking people and it is under the Ughelli North Local Government Area of Delta State. Despite the effort made by the past and present democratically elected governments in building many health institutions across the state, most people of the state still patronise complementary alternative healthcare services through the use of medicinal plants, which are readily available and considered to be relatively safer than the synthetic drugs that are inevitably used in orthodox medicine. The use of these plants to alleviate medical ailments has resulted in the indiscriminate cutting of plant resources, and this is posing a great danger to plant biodiversity in the state particularly, in rural communities, which is already facing threats from deforestation, desert encroachment, and global warming consequences. Although people have been using medicinal plants to cure various diseases in Agbarha-Otor community since time immemorial, though, their usage is rarely documented, and the information is being passed verbally from generation to generation which is associated with the danger of losing some useful information possibly due to aging and death of the custodians of this knowledge (Maregesi et al., 2007), urban migration and lack of interest by the younger generation.

These challenges gave credence to this study which was carried out in Agbarha-Otor community in Ughelli North Local Government Area, Delta State, Nigeria. We aimed to produce an inventory of some of the plants used by the people of Agbarha-Otor community in treating female reproductive conditions and a documentation of how the identified plants are used by the traditional maternal healthcare providers. We adopted a focused approach and carried out a non-experimental validation of the plants used by examining literature on phytochemical/pharmacological information supporting the medicinal activity of any of the documented plants. However, we have defined reproductive conditions to include those that affect reproductive success through pregnancy, delivery and for the prevention of conception.

Materials and Methods

Study Area

Agbarha-Otor community in Ughelli North Local Government Area of Delta State (Latitude: 5.53°N; Longitude: 6.07°E) with a total population of 75,000 people as at last census in 2006. It is one of the largest communities in Urhobo land, both in terms of size and population and widely known for its rich crude oil deposits which is evident in the presence of Shell Petroleum Development Company (SPDC) in the community. Agbarha-Otor lies within the tropical rain forest area of the Niger-Delta regions which experiences high rainfall and humidity most of the year. The climate is equatorial and marked by two distinct seasons: dry and wet seasons. The dry season lasts from about November to April and is significantly marked by the cool "harmattan" dusty and haze from the North-east winds. The Rainy season spans from May to October with a brief dry spell in August. The community is mainly inhabited by the Urhobo people of Nigeria with their major occupation being farming, trading and fishing.



Map of Urhobo showing the location of Agbarha-Otor.
Key:
Agbarha-Otor

Figure 1. Map of Study Area Adapted from: Ohwonohwo (2019)

Data collection and sampling techniques

Ethnobotanical data were collected between May and August, 2021 from 5 respondents who were selected purposely based on their rich traditional knowledge of plants and their medicinal applications especially for women's reproductive health concerns. The selected respondents are traditional birth attendants (TBAs) who are well known in the community due to their long practice in providing services related to traditional healthcare.

The TBAs were interviewed separately in Urhobo language though often times in English language with the help of a semi-structured questionnaire. Basically, the questionnaire contained pertinent questions relating to plants used for gynaecological conditions that occur before and after natal periods. The method of Cotton (1996) and Martin (1995) was employed. Prior to any data collection, informed consent was obtained from respondents.

They were informed that collected data on their indigenous knowledge will be stored and disseminated for new scientific research and discoveries geared towards encouraging conservation efforts to saving their medicinal plants. Information provided by the TBAs were done without objection, except that they wanted their professional interest to be protected by concealing information on the exact formulations and dosages of their products. In the method followed, guided field walks were carried out by accompanying the practitioners during plant collections. Plants were shown with detailed information as to type of management (wild/cultivated), availability (common, sporadic, rare) in the area, whether their occurrence is threatened or not, reproductive health conditions treated, plant part(s) used, whether combinations of plants are used to treat any particular ailment or if any single plant is used to treat multiple ailments, condition of plant part used (fresh/dried), other ingredients or additives (if any), preparation methods, routes of administration, noticeable adverse effects of remedies, taboos/beliefs related to collection and use of plants, source of knowledge, and method of indigenous knowledge transfer. It was observed that the medicinal plants collected by the TBAs in Agbarha-Otor community were collected both from nearby areas to the community, as well as considerable distances (more than 5 km) away from the locality.

Digital pictures of plant samples were taken in the field and samples were collected, pressed and taken to the Department of Plant Biology and Biotechnology, University of Benin for identification and authentication. The non experimental validation for the documented plant species was carried out using a modified version of method described in Lans (2007). This method mainly involved searching scientific literature for phytochemical/ pharmacological data supporting the medicinal use of a plant species.

Results and Discussion

Results

A total of 30 plants belonging to 23 families having properties against different conditions, ailments and peculiarities related to female reproductive health and gynaecological conditions were documented, and their medicinal activity validated non-experimentally. The conditions were categorised on the basis of when they occur in the female reproductive cycle, that is, during pregnancy (antenatal), at delivery, and after delivery (post-partum) as presented in Table 3.

Table 1. Routes of Administration of herbal preparations

Routes of Administration	Frequency	Percentage
Orally	26	87
Topically	4	13
Insertion	-	-
Inhalation	-	-

n = 30

Table 2. Plant parts used in the herbal preparations

Plant parts	Frequency	Percentage
Leaf	20	55.6
Seed	1	2.8
Fruit	4	11.1
Root	1	2.8
Flower	1	2.8
Whole plant	2	5.6
Stem bark	7	19.4

n = 36

Table 3: Some plants used for female reproductive health in Agbarha-Otor community of Delta State, Nigeria

S/N	Condition	Plant species used	Family	Parts used	Preparation and administration
1	Contraceptive	*Persea americana* Mill.	Lauraceae	Barks	Decoction of stem bark taken orally
2.	Postpartum hemorrhage	*Citrullus lanatus* Thumb.	Cucurbitaceae	Leaves	Topical application of leaves poultice on the skin

3	Miscarriage	*Baphia nitida* Lodd.	Fabaceae	Leaves	Topical application of dried ground leaves to lower portion of the abdomen.
4	Labour induction	*Pennisetum purpureum* Schumach	Poaceae	Leaves	Leaves decoction mixed with local gin (*ogogoro*) taken orally
5	Impotency/infertility	*Citrus aurantifolia* Christm.	Rutaceae	Fruits and leaves	Fruits and leaves decoction mixed with palm kernel oil and local gin taken orally
6	Urinary tract infection	*Zea mays* Sturtevant.	Gramineae	Fruit silk	Decoction of fruit silk taken orally
7	Resuscitates unconscious pregnant women	*Alchornea cordifolia* (Schumach. & Thonn.) Müll. Arg.	Euphorbiaceae	Leaves	Blended leaves applied topically
8	Uterus positioning	*Ocimum basilicum* L.	Lamiaceae	Leaves	Leaf infusion taken orally
9	Umbilical cord infection	*Bryophyllum pinnatum* (Lam.) Oken	Crassulaceae	Leaves	Mixture of leaf decoction and local gin taken orally
10	Gonorrhea	*Bambusa vulgaris* Schrad. ex J.C. Wendl.	Poaceae	Stem	Local gin infused with stem, tobacco and native salt taken orally
11	Fetal macrosomia	*Piper nigrum* Linn.	Piperaceae	Leaves	Fresh leaf is chewed
12	Iron-deficiency anaemia	*Musa paradisiaca* Linn.	Musaceae	Fruit, Bark	Bark is boiled with black pepper and fish and taken orally
13	Anaemia	*Lycopersicon esculentum* Linn.	Solanaceae	Fruits	Fruit decoction taken orally
14	Induction of labour and blocked fallopian tube	*Brassica oleracea* Linn.	Cruciferae	Leaves	Mixture of leaf decoction and local gin taken orally
15	Sedative for children	*Hibiscus rosa-sinensis* Linn.	Malvaceae	Leaves	Leaf decoction is used to bath infant
16	Internal bleeding	*Aspilia africana* (Pers.) C.D. Adams	Asteraceae	Leaves	Leaf decoction taken orally
17	Induces labour	*Vernonia amygdalina* Del.	Asteraceae	Leaves	Leaves are extracted with local gin and taken orally
18	Inhibits menstruation during pregnancy	*Newbouldia laevis* (P. Beauv.) Seem.	Bignoniaceae	Stem bark	Grinded stem bark is boiled with Cameroon pepper (yellow pepper) and taken orally
19	Miscarriage	*Musanga cecropioides* R.Br.ex Tedile.	Urticaceae	Seeds ,leaves and root	Infusion of grinded whole plant parts taken orally

20	Miscarriage	*Magnifera indica* Linn.	Anacardiaceae	Stem bark	Stem bark are boiled and administered orally
21	Anaemia and reduce nausea and morning sickness during pregnancy	*Musa acuminate* Colla.	Musaceae	Stem	The stem is cut when rotten, ground and infused in water
22	Miscarriage	*Laportea aestuans* (L.) Chew	Urticaceae	Leaves	Decoction of bark, tobacco leaf and black pepper taken orally
23	Headaches and stabilises sugar level during conception	*Curcuma longa* L.	Zingiberaceae	Leaves	Leaves decoction with sensitive plant (*Mimosa pudica*) administered orally
24	Miscarriages and abortions	*Avicennia africana* P.Beauv.	Acanthaceae	Leaves, stem and flower	Flowers and leaves decoction mixed with palm kernel oil and local gin administered orally
25	Pregnancy nourishment	*Talinum triangulare* (Jacq.) Willd.	Talinaceae	Leaves	Decoction of leaves taken orally
26	Contraception	*Jatropha gossypiifolia* L.	Euphorbiaceae	Leaves	Leaves decoction mixed with local gin taken orally
27	General well being	*Ipomoea aquatica* Forssk.	Malvaceae	Whole plant	Water infusion of powdered plant taken orally
28	Miscarriage, labour induction and menstrual cramps	*Corchorus olitorius* L.	Loganiaceae	Leaves	Leaves decoction taken orally
29	Still births and anaemia	*Spigelia anthelmia* L.	Asteraceae	Leaves	Local gin extraction of leaves taken orally
30	General well being	*Ageratum conyzoides* L.	Convolvulaceae	Whole plant	The whole plant is extracted with local gin and administered orally

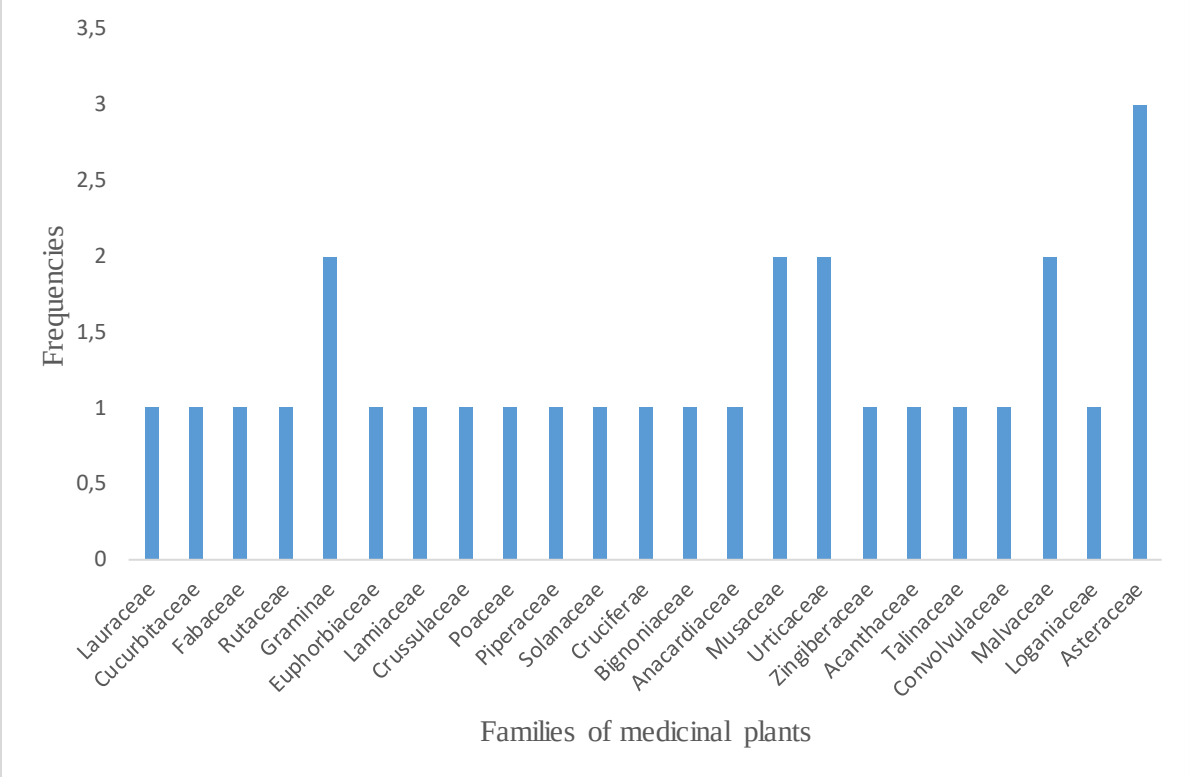


Fig 2. Frequencies of families of medicinal plants

Discussion

Documentation of ethnomedicinal knowledge is a critical issue owing to its enormous potential to enhance research and development. Available literature consulted shows that, the use of ethnomedicinal plant to treat various ailments, particularly, female reproductive conditions were not documented in the study area. Hence, this study adopted an approach focusing on plants used for female reproductive conditions in Agbarha-Otor community. During the field survey, respondents, specifically, traditional birth attendants (TBAs) reported ethnomedicinal data on 30 species of plants (Table 3) distributed across 23 families (Fig. 2) as having properties against different conditions, ailments and peculiarities related to the women's reproductive healthcare. Among the families reported, Asteraceae was represented with the highest number of plant species in conformity with some studies carried out in a locality of Cameroon (Adjanohoun et al. 1996; Focho et al., 2009; Noumi, 2010; Simbo, 2010). These plant families are among the most commonly seen in South Western Nigeria used in the treatment of infertility and sexually transmitted diseases (Abo et al., 2000).

Also, the vast utilisation of species from these families might relate to the presence of effective bioactive secondary metabolites that work against reproductive health–related infections (Cowan 1999; Gazzaneo et al. 2005; Kamatenesi-Mugisha and Oryem-Origa, 2007; Kothale et al. 2011; Néné Bi et al. 2009).

Most medicinal plants used in the area were majorly herbs, which agrees with results from other studies in Nigeria (Agize et al. 2013), Cameroon (Adjanohoun et al. 1996; Jiofack et al. 2010; Simbo 2010), Uganda (Kamatenesi–Mugisha et al. 2007), Ivory Coast (Djah and Danho, 2011), Ethiopia (Megersa et al., 2013), and Democratic Republic of Congo (Kasali et al. 2014). This could imply that herbs are usually more readily available than shrubs and trees that are often prone to regular harvesting from forest patches far away from residential areas. It could also be due to the fact that the respondents live in areas where herbs abound. Giday

et al. (2003) reported that the Zay people in Ethiopia derive their medicine from herbs partly because of the fact that forests have been degraded, whereas it usually takes much more time and effort to harvest material from medicinal trees. It is true that herbs can grow everywhere (roadside, home garden, farmland, and in wild habitats) and are common in the study area compared with other perennial life forms such as shrubs, trees, and climbers. On the other hand, the present survey is in conflict with the findings of Diame (2010), which was conducted on plants used for reproductive health at Bia Biosphere reserve in the Western region of Ghana. This survey is also in conflict with the findings of Yineger and Yewhalaw (2007), who reported that trees and shrubs were the most frequently used growth forms for remedy preparation.

It was evident that oral (87%) route was the most used method of administration since the majority of the extracts were alcoholic or aqueous and acceptable through the mouth, while topical (13%) application was the least means of application of the herbal formulation (Table 1). Leaves were the most frequently used plant part in the preparation of drugs in the study area (Table 2). They were administered directly in the form of decoctions, and in few cases applied externally or topically. Okoegwale and Omefezi (2001) indicated that leaves of plants accumulate inulins, tannins, and other alkaloids more than other parts of plants which may be responsible for their various medicinal properties, hence explaining their wide use. According to our results, the majority of herbal remedies in the research area were prepared from fresh materials. Other ethnobotanical inventories (Bussmann and Glenn, 2010; Yineger et al., 2007) have also indicated the wide use of fresh plant material for remedy preparation probably because of the higher efficacy than when using dried plant materials. This is because some important chemicals may change in nature or even disappear upon drying. Also, the dominant use of medicinal plant decoctions for various ailments associated with the reproductive health system might be related to their proven effectiveness over many years of trial and indigenous knowledge accumulated on the efficacy of such preparations. On the other hand, the frequency of this method of preparation by a majority of respondents may be due to the fact that boiling the ingredients will kill some unwanted microbes that are present on the plant material used (Souad et al. 2010; Ugulu et al. 2009). However, heat facilitates extraction of active compounds from the plant part that is an ingredient in the remedy (Souad et al. 2010). Decoction also preserves the prepared medicine longer (Muthu et al. 2006).

The majority of medicines in the area were administered orally (Table 1). Similar findings were reported by other researchers (Bhattarai et al. 2010; Kamatenesi et al. 2011). The choice of oral administration over possible alternatives may be related to the use of some solvents (water, palm oil, or local wine or gin called *ogogoro*) that are commonly believed to serve as a good vehicle to transport the remedies' active principles. As already indicated, most medicinal plants in the study area are collected for their leaves, such as *Citrullus lanatus, Pennisetum purpureum, Alchonea cordifolia, Hibiscus rosa-sinensis, Laportea aestuans, Curcuma longa* and so on (Table 3). This practice helps to reduce the pressure on these species compared to what would happen if bark or roots were collected.

From the overall survey, it could be deduced that the high level of consensus among the TBAs about the use of medicinal plants for reproductive healthcare and gynaecological conditions prevalent in the study area suggests that the ethnomedicinal uses of these plants is still in practice. However, scientific validation of the biological properties of the surveyed plants is highly advocated and cultivation of medicinal plants to minimize the pressure on wild species is also recommended.

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