The handle http://hdl.handle.net/1887/28942 holds various files of this Leiden University dissertation

**Author:** Towns, Alexandra Maria  
**Title:** Fertility and fontanels: women’s knowledge of medicinal plants for reproductive health and childcare in western Africa  
**Issue Date:** 2014-09-30
Chapter Four

Traditional medicine and child care in Western Africa: mothers’ knowledge, folk illnesses, and patterns of healthcare-seeking behavior

Alexandra M. Towns, Sandra M. Eyi and Tinde van Andel

Published in *PLoS ONE* 9(8): e105972, 2014
Abstract

Background
In spite of the strong role of traditional medicine in childcare in the pluralistic healthcare system in Western Africa, little information is known on mothers’ domestic plant knowledge. Identifying local perspectives and treatments of children’s illnesses, including folk illnesses, is essential to having a comprehensive understanding of how mothers make healthcare treatment decisions. We aimed to identify which infant illnesses Beninese and Gabonese mothers knew to treat with medicinal plants and for which illnesses they sought biomedical care or traditional healers.

Methods
We conducted 81 questionnaires with mothers in Bénin and Gabon and made 800 botanical specimens of cited medicinal plants. We calculated the number of species cited per illness and the proportion of participants knowledgeable on at least one herbal remedy per illness. Using qualitative data, we described folk illnesses in each country and summarized responses on preferences for each of the three healthcare options.

Results
Participants from both countries were most knowledgeable on plants to treat respiratory illnesses, malaria, diarrhea, and intestinal ailments. Mothers also frequently mentioned the use of plants to encourage children to walk early, monitor the closure of fontanels, and apply herbal enemas. Major folk illnesses were atita and ka in Bénin and la rate and fesse rouge in Gabon. Traditional healers were reported to have specialized knowledge of cultural bound illnesses. Malaria was frequently cited as an illness for which mothers would directly seek biomedical treatment.

Conclusion
Mothers largely saw the three systems as complementary, seamlessly switching between different healing options until a remedy was found. Folk illnesses were found to give insight into local treatments and may reveal important neglected diseases. Due to high reported levels of knowledge on treating top statistical causes of infant mortality and folk illnesses, mothers’ medicinal plant knowledge should be included in the analysis of healthcare-seeking behavior for childcare.
Introduction

Sub-Saharan African healthcare is essentially pluralistic, structured around three main systems: biomedical care, traditional healers, and popular knowledge (van der Geest 1997; Nyamongo 2002). In spite of the promotion of biomedicine by international healthcare organizations, traditional medicine remains the primary form of healthcare for more than 80% of African populations (WHO 2008). Traditional medical systems include not only traditional healers, but also the popular knowledge of local populations, known as domestic medicine or home remedies. Most ethnobotanical literature on traditional medicine is concentrated on the knowledge of traditional healers and largely overlooks domestic medicine, the knowledge of women, (Pfeiffer and Butz 2005) and more specifically, the knowledge of mothers (Vandebroek 2013; McDade et al. 2007). Since home remedies (self-treatment with herbs) comprise the majority of African medicine (van der Geest 1997; Pearce 1993; Geissler et al. 2002), domestic knowledge needs to be prioritized in medical research and reinforced in order to improve healthcare and enhance local populations’ responses to illness. This point is especially critical in high priority health populations, such as infants and children in sub-Saharan Africa (Black et al. 2010).

African mothers’ knowledge of health is directly associated with children’s well-being, as women are largely responsible for childcare (Miller 2011; Geissler et al. 2002). Recent ethnobotanical research has found that mothers’ knowledge of herbal medicine has a positive effect on child health outcomes, including a decrease in infections (Miller 2011; Tanner et al. 2011). Mothers who had high levels of plant knowledge and use have been shown to have healthier children (McDade et al. 2007) and a greater likelihood to take ill children to a dispensary, suggesting that knowledge in one healthcare domain corresponds with better overall understanding of health (Miller 2011).

In spite of these correlations, biomedical studies have largely measured mother’s health-seeking behavior on factors related to biomedical care, such as formal education, distance to provider, and cost of obtaining care (Rutherford 2010). This literature overlooks if and what role local concepts of illness have in treatment choices and results in the loss of incorporating this information into infant health programs (Beiersmann and Sanou 2007). Local concepts of illness include not only local names, perceptions, and symptoms of biomedical illnesses, but also cultural bound syndromes, “a group of folk illnesses, each of which is unique to a particular group of people, cultural, or geographical area (Helman 2007). Some scholars have cautioned that the “cultural” component of the term cultural bound syndromes emphasizes the biomedical perspective that biological illnesses are more objective than folk illnesses (Helman 2007). We use the term in order to designate those illnesses not generally defined and recognized in biomedicine.

Understanding local perspectives of the treatment of major children’s illnesses identified by the WHO (Colvin et al. 2013), such as malaria (Nsungwa-Sabiiti et al. 2004; Beiersmann and Sanou 2007) and diarrhea (de Zoysa et al. 1984; Green 1985), as well as the treatment of children’s folk illnesses (Straus et al. 2011; Mogensen 2000), is essential to having a comprehensive understanding of childcare in Africa. In this study, we assessed how mothers make healthcare decisions by identifying which infant illnesses mothers in Western Africa treat with medicinal plants and for which illnesses they seek biomedical care or consult traditional healers. We worked in Bénin and Gabon, two African countries with diverse populations, vegetation types, cultures, and levels of human development. Our research was based on the following research questions: Which children’s illnesses do Beninese and Gabonese mothers treat with medicinal plants? What are the major children’s folk illnesses in each country? For which ailments do mothers seek treatment from biomedical doctors? Which illnesses do mothers prefer to be treated by traditional healers?
Methods

Study areas
Bénin is located in West Africa, with a surface area of 112,622 sq. km and a population of 9.8 million people (CIA 2013a). It is ranked below the Sub-Saharan average in the Human Development Index (HDI) and considered a country of “low human development” (UNDP 2013a). It has an infant mortality ratio of 58 deaths per 1,000 live births (CIA 2013a). Gabon is located in Western Central Africa, with a surface area of 267,667 sq. km, and a population of 1.7 million people (CIA 2013b). The UNDP ranked Gabon 106th in the Human Development Index, slightly above countries of “medium human development” (UNDP 2013b). It has an infant mortality ratio of 48 deaths per 1,000 live births (CIA 2013b).

Data collection and analysis
Between April and October 2011 we worked in rural and urban areas of Bénin, mainly with Fon and Yoruba ethnic groups in the southern departments Collines, Kouffo, Zou, Plateau, Ouémè, Atlantique, Mono, and Littoral (Fig. 1).

Fig. 1 Map of the Bénin fieldwork sites in 2011
From June until December 2012, we worked with Bantu-speaking ethnic groups in Gabon, namely, the Fang, Mitsogo, Obamba, and Bapounou peoples, in the departments of Estuaire, Woleu-Ntem, Haut-Ogooué, Ngounié, and Ogooué-Ivindo (Fig. 2).

We started our research at the herbal marketplaces in each country, taking time to familiarize ourselves with commonly utilized species, local illnesses and healthcare practices. From these initial market contacts, we utilized snowball sampling to identify women from surrounding urban and rural communities. We conducted an ethnobotanical questionnaire on practices related to childcare, including questions on herbal remedies for specific illnesses, definitions of folk illnesses, and preferences for the three types of healthcare. In total we interviewed 43 Beninese and 38 Gabonese mothers. In Bénin we worked with the following ethnic groups: Fon and related (70%), Yoruba and related (14%), Adja and related (5%) and mixed ethnicities (11%). In Gabon we worked with the following ethnic groups: Fang (45%), Mitsogo (16%), Babungu (16%), Obamba (8%), Bapounu (5%), and other (Ossimba, Omiene, Bateke) (10%). All women received financial compensation equivalent to local salaries for their time and involvement. We conducted the questionnaires orally in French, at participants’ homes and workplaces, and employed local language interpreters when needed. After each of the 81 questionnaires, we accompanied participants to collect the plants that were cited in the interviews. We used standard botanical collection methods to make vouchers of plants from the
surrounding gardens, forests, and savanna landscapes (Martin 2004). For women that we interviewed on the market, we purchased plants directly from market stalls and made trips into the field together to collect fresh samples when possible. In addition to the voucher specimens, we collected detailed information on their use, effects, and local names (see Table S1 and S2). We deposited vouchers of all collected plants at the Herbier National du Bénin (BEN) and the Herbier National du Gabon (LBV). A complete set of duplicates was exported to the Wageningen branch of National Herbarium of the Netherlands (WAG), now merged with Naturalis Biodiversity Center, where the specimens were identified by the research team and several botanical specialists. Our plant collection did not involve endangered or protected plant species.

We assessed mothers’ knowledge of domestic medicine by calculating the number of species for each health issue and the percentage of mothers who knew at least one herbal recipe for each illness. We then summarized descriptions of folk illnesses and selected qualitative data from our interviews to illustrate which illnesses mothers treated with the three systems of healthcare: biomedicine, their own plant knowledge, or traditional healers. Maps of the fieldwork locations were created in ArcGIS 10.1 using open source geospatial data from DIVA-GIS (http://www.diva-gis.org/).

**Ethics statement**

We adhered to all components of the Code of Ethics of the International Society of Ethnobiology (International Society of Ethnobiology 2006), including carefully explaining the nature of our research, receiving oral consent, providing monetary compensation for involvement in the work, anonymizing informants’ identities during data analysis, and working in a fully mindful and respectful manner. Oral consent was acquired in place of written consent due to the largely illiterate populations with whom we worked. We followed all research procedures and protocols at Leiden University, Naturalis Biodiversity Center, and the host institutes in each country. For the Bénin fieldwork, we acquired a formal invitation from the Faculté des Sciences Agronomiques, Université d’Abomey-Calavi (UAC), received a research permit (#041511) from the Faculté des Sciences et Techniques (UAC), and obtained a plant export permit (#0000591) from the Service de la Protection des Vegetaux et du Control Phylosanitaire, Ministre de l’Agriculture, de l’Elevage et de la Peche. For the Gabon fieldwork, the Centre National de la Recherche Scientifique et Technologique (CENAREST) provided a letter of invitation (#176). After approving our research proposal, CENAREST granted research permit (#AR0028/12). We acquired authorization to enter the National Parks of Gabon (#000026) from the Agence Nationale des Parcs Nationaux (ANPN), and authorization to export botanical specimens (#00145, #00219) from the L’Institut de Pharmacopée et de Médecine Traditionelles (IPHAMETRA). We received formal administrative approval from our host institutes and were not required to submit our proposals to a human subjects review board for further review.

**Results**

**Mothers’ knowledge of treating biomedical childhood illnesses with plants**

Beninese participants cited 255 medicinal plant species and Gabonese participants cited 179 species. All species, together with vernacular names, scientific names and specific uses, are listed in Appendix 1 (Bénin) and Appendix 2 (Gabon). The highest percentages of plants in both countries were used to treat those child illnesses considered to be of major concern by the WHO: diarrhea, respiratory conditions, and malaria. Over 95% of women in Bénin and over 84% of women from Gabon knew at least one recipe to treat those diseases (Table 1). Respiratory-related ailments included illnesses such as the flu, cough, asthma, bronchitis, and specific folk illnesses related to respiratory problems in the case of Gabonese informants. Mothers also mentioned children’s ailments such as earache, chicken pox, colic, stomachache and vomiting, which we left out of the table because few plants and treatments were cited.
Children's Folk illnesses in Bénin

Mothers from Bénin mentioned two main folk illnesses, *atita* (Fon) and *ka* (Fon), and several cultural practices. *Atita* was described as a rash with “red bumps coming from the anus” or “itchy and stinging” red bumps in the groin and armpits. It was reported to be caused by the over-consumption of sugar or peanuts by the child or by the mother during pregnancy. The most common treatment for *atita* was an herbal bath or boiled plants consumed as tea (Appendix 1). *Ka* was described as an infection with large red bumps that were caused by the heat. It was reported to be treated by herbal baths, ingested teas, and through applying macerated plants directly to the infection.

The care and maintenance of open *fontanels* was a common practice in Bénin. Mothers’ considered it to be important for the soft spot of the fontanel to be able “breathe” and eventually close. They used various herbal pomades, washes, and ingested teas for young children whom became ill from the failure of the fontanels to close. Beninese mothers highly valued their children to *walk early* in life. They encouraged their children with massages, herbal baths, and ingested teas. *Walking early* was seen as a sign that the child was developing normally and gaining independence, which would enable the mother to rest. Enemas were administered to newborn infants to remove the meconium, as well as to older infants for daily cleanses and constipation relief. These enemas frequently contained ground red peppers (*Capsicum annuum*) or different species of melegueta pepper (*Aframomum* spp.) mixed with water. Strengtheners were used in herbal treatments for premature birth, as newborn strengtheners, and in general to assist an infant’s growth. Delayed and stunted growth was explained by mothers to be caused either by malnutrition or if an expectant mother came in contact with a praying mantis (hence the hunched over appearance and thin arms of an infant). It was treated with an herbal bath with an herbal recipe that included the eggs of a praying mantis. Various herbal treatments were applied to the umbilical cord of newborns to hasten the recovery period, as well as the application of herbs to assist in the healing process of circumcision.

Children’s Folk Illnesses in Gabon

Gabonese and Beninese mothers shared the cultural practices of monitoring the closure of the *fontanels*, encouraging children to *walk early*, and bathing newborns and young children to give strength. Monitoring the closure of *fontanels* (*abobane* in Fang) in Gabon was considered necessary to avoid “bad wind or spirits” that could enter, resulting in a child’s stunted growth. Herbal treatments included applying pomade made from leaves directly to the infants’ head and applying peanut butter to the palate of the mouth (Appendix 2). Mothers pointed out that not all children suffered from open *fontanels*. Encouraging children to *walk early* also was seen as the mothers’ recuperation of independence; they could do more work because the child could run outside with its siblings. One of the most commonly mentioned Gabonese folk illnesses was known as *fesse rouge* in French (*ntcheke* in the Babungu language, *kusu* in Punu, *tzogho* in Fang, and *kengey* in Teke). Like its literal French translation, the symptoms of *fesse rouge* included a red, irritated bottom caused “by sitting in the dirt,” “by microbes,” or “during childbirth when heat enters the body through the anus.” Treatments included applying herbal pomades and herbal enemas.

Folk illness *la rate* (*tzit* in Fang and *kabama* in Teke) which in English is translated as “the spleen,” was characterized by a tender, swollen left side of the body and a skinny overall physical build. An earlier stage of *la rate*, known as *ebem* in Fang, was characterized by high fever and green feces. Although most respondents were not aware of the cause of *la rate*, some participants mentioned God’s will, anemia, and malnutrition as possible causes. Treatments included herbal massages, herbal enemas, and traditional “vaccinations” - the creation of small incisions on the left side of the body with a razor blade and application of the fresh juice of plants into the cuts. Folk illness *pogha* (in Mitsogo and Babungu languages) was characterized by fever, fatigue, convulsions, but distinct from the symptoms of malaria. It was reported to be caused either by God’s will or the mother’s food consumption when the child was young. Herbal baths were the primary form of treatment. Included in the calculations for respiratory-related ailments (Table 1) were several recipes mentioned by Fang women for respiratory-related folk illnesses, including *onkoe abijel*: “respiratory problems caused by bad water during delivery,” *onkouabial*: “bad lungs after birth,” and *ebulonkuk*: “bad lungs caused by sorcery.”
Mothers’ knowledge of treating folk illnesses with plants

Aside from the use of plants for intestinal cleansing, fewer women knew how to treat folk illnesses than biomedical illnesses (Table 1). In Bénin, percentages of mothers who knew recipes for them ranged from 80% for atita to 65% for ka. In Gabon, over two-third of all participants knew herbal treatments for common children’s folk illnesses. Table 1 also shows that folk illnesses are location-specific. With the exception of fontanels and walk early, Beninese CBS like atita and ka were unknown to Gabonese mothers, while fesse rouge and la rate were not known in Bénin. Although the terms and perceived causes of atita in Bénin and fesse rouge in Gabon do not coincide, the two folk illnesses were somewhat similar in description. The CBS pogha was only mentioned as an illness by mothers in the Gabonese department of Ngounié.

Table 1 Children’s health issues treated with medicinal plants by mothers in Bénin and Gabon

| Health Issue                | # species (%) | #participants (%) | # species (%) | #participants (%) |
|-----------------------------|---------------|-------------------|---------------|-------------------|
|                             | N= 255        | N=43              | N= 179        | N=38              |
| respiratory-related         | 53 (21)       | 42 (98)           | 49 (27)       | 32 (84)           |
| diarrhea                    | 39 (15)       | 41 (95)           | 27 (15)       | 34 (89)           |
| malaria                     | 54 (21)       | 41 (95)           | 36 (20)       | 33 (87)           |
| intestinal cleanse *        | 58 (23)       | 41 (95)           | 31 (17)       | 33 (87)           |
| measles                     | 34 (13)       | 37 (86)           | 17 (9)        | 30 (79)           |
| strenghtener *              | 59 (23)       | 40 (93)           | 21 (12)       | 22 (58)           |
| fontanels *                 | 31 (12)       | 35 (81)           | 23 (13)       | 28 (74)           |
| post-circumcision           | 32 (13)       | 37 (86)           | 14 (8)        | 21 (55)           |
| walk early *                | 22 (8)        | 28 (65)           | 17 (9)        | 29 (76)           |
| umbilical cord              | 13 (5)        | 32 (74)           | 12 (7)        | 24 (63)           |
| convulsions/crisis*         | 32 (13)       | 33 (77)           | 4 (2)         | 4 (10)            |
| teething                    | 25 (10)       | 30 (70)           | 2 (1)         | 4 (10)            |
| anti-sorcery *              | 21 (8)        | 25 (58)           | 6 (3)         | 6 (16)            |
| fever                       | 37 (15)       | 19 (44)           | 14 (7)        | 7 (18)            |
| atita *                     | 31 (12)       | 35 (81)           | -             | -                 |
| ka*                         | 26 (10)       | 29 (67)           | -             | -                 |
| fesse rouge *               | -             | -                 | 26 (15)       | 28 (74)           |
| la rate*                    | -             | -                 | 34 (19)       | 26 (68)           |
| pogha*                      | -             | -                 | 10 (6)        | 6 (16)            |

1Percentage of mothers from each country who knew at least one herbal recipe
*Folk illness or treatment

Health-seeking behaviors of Beninese mothers

Although there was little consensus on one preference for healthcare (Table 2), Beninese women generally reported starting to treat their children with medicinal herbs, following up with biomedical care, and seeking traditional healers as a third resort. An 80-year old Mina woman said “Traditional medicine is first. Some use the hospital first, for example for fever or if one needs blood. A traditional healer is called upon to consult the fa (oracle) and for sacrifices.” Women who reported to never consult traditional healers mentioned the church and prayer as spiritual forms of treatment. Self-administered herbal medicine was reported to be preferred for treating children’s illnesses due to its ability to help defecate well, its use as preventative medicine, and its perceived effectiveness. Respondents often mentioned using plants to self-treat for a certain number of days (ranging from two days to one week) and then seeking biomedical care. Biomedicine was acknowledged to have the advantage of having advanced technology and materials but was perceived as being more expensive. A 36-year old Yoruba woman said, “Traditional medicine is used for constipation and atita- those you
can treat at home. Modern medicine is used for difficult cases— they are better equipped. Traditional healers are consulted for superhuman cases because they know more about this domain.” Advanced forms of illnesses, especially malaria, were commonly reported to be treated with biomedicine. Seeking traditional healers to treat victims of sorcery and folk illnesses were strong themes. Traditional healers were reported to treat illnesses “that surpass the knowledge of doctors,” and for causes such as sorcery or witchcraft. A minority of mothers reported the common folk illnesses as well as asthma, to be “men’s knowledge,” outside of the maternal domain of skills. It was not clear if men’s knowledge meant the specialized knowledge of (male) traditional healers or more generally, fathers in the community. An 80 year old Fon woman said, “First try to treat at home with herbs for a couple of days. If they do not work, go to the hospital. If this does not work, go to a traditional healer. Asthma and fetus health are men’s knowledge. Fontanels are traditional healers’ knowledge.”

Table 2 Most frequent responses by mothers to healthcare seeking options question in Bénin (N=43) and Gabon (N=38)

| Response                                      | % of mothers Bénin | % of mothers Gabon |
|-----------------------------------------------|---------------------|--------------------|
| First choice self-treatment with plants       | 42                  | 29                 |
| First choice biomedicine (malaria, anemia, fever) | 16                  | 32                 |
| First choice biomedicine (always)             | 0                   | 21                 |
| First choice traditional healer                | 7                   | 18                 |
| Second choice biomedicine                      | 30                  | 13                 |
| Second choice self-treatment with plants      | 0                   | 11                 |
| Third choice traditional healer                | 23                  | 3                  |
| Never consult traditional healer               | 5                   | 11                 |

Health-seeking behaviors of Gabonese mothers

There was also a large range of responses from Gabonese women (Table 2). Nearly the same number of Gabonese mothers preferred self-treatment as a first form of healthcare as mothers who preferred treating children first with biomedicine. The strongest consensus of women cited specific illnesses, especially malaria, in which they would seek biomedical care directly. A 40-year old Obamba woman said “Use modern medicine for malaria, etc. We’re evolved for serious illness. Use traditional medicine if modern medicine doesn’t work, or if it’s not serious. A ganga is outdated, we no longer use them.” However, other women favored the consultation of a ganga, the spiritual leader of the community, or the nyembe, the spirit in a women’s secret society in the Ngounie department, in order to know where to treat the illness. This was a reoccurring theme, suggesting a strong role of spirituality and religion in childcare, especially for folk illnesses. A 50 year old Fang woman said, “One should seek modern medicine for an operation; injections go straight to the blood and therefore work faster... Traditional medicine depends on God’s grace; prayer helps too. Go to a ganga for sorcery.” We found a reoccurring theme among Gabonese mothers that three systems were largely complementary. A 42-year old Fang woman said: “Try traditional medicine, if it does not work, the genies (spirits) will tell you to go to modern medicine. Work with the spirits! Between modern medicine and traditional medicine, there is a good collaboration. Gabon is currently in good position between the two systems.” A 61-year old Omiene women said “The three systems are complementary; you will find a solution between the three. It also depends on one’s belief system; some people are hesitant to go to a ganga.”
Discussion and Conclusion

Biomedical illnesses and their treatment
The majority of women in Bénin and Gabon knew herbal treatments to treat the top causes of infant mortality: respiratory problems (98%, 84% respectively), malaria (95%, 87%), and diarrhea (95%, 89%). This outcome suggests that traditional medicine, and more specifically mothers’ knowledge of plants, is a major factor in the management of these common childhood health ailments. Even though mothers were knowledgeable on treating these illnesses, however, they also distinguished situations where they would seek biomedical care prior to using domestic medicine, such as complicated cases of malaria, anemia, or fever. Studies in other African countries also found that mothers preferred to treat malaria with biomedical care (Montgomery et al. 2006). Only a few mothers mentioned diarrhea specifically as a case that they would seek biomedical care as a first option, suggesting diarrhea is largely treated by mothers with plants as was found in a recent study in Sierra Leone (Bakshi, McMahon, and George 2013). Likewise, respiratory ailments were not specifically mentioned as a case for seeking biomedical care. The high percentage of women who know how to treat these illnesses and the high number of plants attributed to their treatment suggest a parallel recognition of major causes of infant morbidity and mortality between the mothers and the statistics of the WHO, indicating agreement between local and biomedical priorities for children’s health. This agreement between medical priorities is not always the case, in a similar study on women’s health in Bénin and Gabon, we found that local and biomedical priorities did not coincide (Towns and van Andel 2014).

Folk illnesses and their treatment
Folk illnesses ranked directly after the major biomedical illnesses for children in terms of mothers’ medicinal plant knowledge. Our research supports ethnobotanical studies from other parts of the world that have indicated local populations commonly prefer to treat folk illnesses with traditional medicine (Vandebroek 2013; Quinlan 2010; Mathez-Stiefel, Vandebroek, and Rist 2012). While many participants in our study knew herbal remedies to treat folk illnesses, it is clear that traditional healers and religion have a strong role in this domain. Men, more generally speaking, were also regarded as having specialized knowledge in Bénin. Fathers also have a role in the treatment of children’s illnesses, in terms of their own knowledge of medicinal plants (McDade et al. 2007) and their role in family decision-making (Montgomery et al. 2006).

Folk illnesses are of interest to biomedical health care providers, not only because they often make up a significant portion of local health complaints (Vandebroek 2013) but they may address underlying neglected diseases. Fontanels are common children’s folk illnesses around the world, and in other African countries such as Swaziland, Zimbabwe, Botswana and Malawi (Kay 1993). Certain (bulging or sinking) appearances of the fontanels may be symptoms of a range of disorders from dehydration to malnutrition to Down Syndrome (Kiesler and Ricer 2003). Moreover, when mothers apply paste on the fontanel prior to arriving at the hospital, doctors cannot assess the fontanel very well (because of the plant pomades) and may misdiagnose the child’s illness. La rate resembles the symptoms of sickle-cell disease, a common yet neglected illness of children in Western Africa (Grosse et al. 2011), especially its characteristic concentrated pain on the left side and spleen enlargement (Meier and Miller 2012). This overlap is a fertile ground for improved research and educational programs on sickle cell disease (Makani, Williams, and Marsh 2007). Enemas for intestinal cleanses, especially for newborns and small children, were a common practice in both countries. In the Ivory Coast, Gottlieb (Gottlieb 2004) found that enemas were used to make a baby defecate at a given time. Biomedical research has highlighted the danger in using enemas, especially among young children (Bland et al. 2004).

Even if these illnesses are not recognized as biological in nature, their treatment nevertheless has consequences, either positive or negative, on children’s health. Taking local perspectives and treatments
into account not only informs biomedicine of cultural concepts of illness and healing (Etkin 1998), it also facilitates an understand of plant’ effects through pharmacological studies (Reyes-García 2010), and enables an understanding of how traditional systems of healing and biomedicine are already interacting on the ground (Langwick 2011).

**Complementarity of three systems**
The lack of any one definitive pattern of healthcare-seeking behavior among mothers in our study reflected the truly pluralistic healthcare systems of both countries (van der Geest 1997), the dynamic process of deciding how to care for children (Colvin et al. 2013), and the fact that mothers see the three African systems of healthcare as largely complementary. Mothers’ general pattern of resort (Ryan 1998) was to self-treat with plants first, seek biomedical care for specific illnesses or as a second source of healthcare and to consult the spiritual realm, including gangas and the nyembe in Gabon, to treat folk illnesses. However, as found in a recent study in South Africa (Friend-du Preez, Cameron, and Griffiths 2013), this pattern varied according to illness; each healthcare option was seen to have specific advantages and disadvantages. Biomedicine was perceived to have the advantage of advanced technology and materials, especially for treatments related to blood transfusions. Some mothers in Bénin reported a preference of using self-collected herbal medicine over biomedical care due to the expensive of modern treatment.

Future research can take demographic and socio-economic data into account to further the understanding of preferences for childcare treatment (Bakshi, McMahon, and George 2013). Infant and child healthcare will be enriched if local knowledge, illness concepts, and medicinal plants fit into a larger framework that studies healthcare from a community perspective (van der Geest 1997), including researchers from outside the biomedical field (Vandebroek 2013). With the Millennium Development Goals concluding in 2015, and the reality that both countries have not met their targets of reducing infant mortality rates (UNDP 2013b; UNDP 2013a), there is a renewed opportunity for infant healthcare initiatives to become more comprehensive.

**Acknowledgments**
In Bénin, we would like to thank the professors at the University of Abomey-Calavi, especially A. Akoegninou and B. Sinsin, as well as the staff of the National Herbarium of Bénin (BEN), and l’Institut de Développement et d’Échanges Endogènes (IDEE). We are grateful to S. Ruysschaert, K. Ostertag, and L. Atindehou for their assistance in the Bénin fieldwork. The Gabon fieldwork was supported by the research staff at L’Institut de Pharmacopée et de Médecine Traditionnelles (IPHAMETRA), the National Herbarium of Gabon (LBV), HB Bourobou, le Centre National de la Recherche Scientifique et Technologique (CENAREST), and the Agence Nationale des Parcs Nationaux (ANPN) in Gabon. The authors would like to share a special thanks to E. van Vliet E, H. Eyi Ndong, J.P. Ongoda, A. Izouret, and the Grand Kami of Assiami for their assistance with the questionnaires. In the Netherlands, we would like to thank M. Sosef for his logistical support and the expert botanists at Wageningen University for their assistance with plant identification.
### Appendix 1

Species cited in 43 childcare questionnaires in Bénin: scientific botanical name, vernacular plant name(s), plant part used, preparation, use category and collection number

| Botanical Name                      | Vernacular Name* | Used part   | Preparation* | Use category* | AMT #* |
|-------------------------------------|-----------------|-------------|--------------|---------------|--------|
| *Abelmoschus esculentus* (L.) Moench | gombo (Fr)      | leaves, fruit | HB, EA       | newborn, fontanels | NC     |
| *Abrus precatorius* L.              | bouchench (T), djindjekendjeman/viviman (F, G) | leaves | E, T, HB | cough, post-circumcision, respiratory problems | 297    |
| *Acacia cf. *erythrophylla* Brenan   | ewan (N)        | stem        | HB           | walk early    | NC     |
| *Acacia cf. sieberiana* DC.         | adouwe (G)      | leaves      | T            | teething      | NC     |
| *Acacia nilotica* (L.) Delile        | banni (F)       | seeds       | T            | asthma        | NC     |
| *Acanthospermum hispidum* DC.       | toba/ahowonglon (F), kpononou (G), owgbornan (N), tchako (T) | leaves, whole plant | D, T, EN | cough, malaria, fever, CBD ka, respiratory problems, walk early | 211, 237 |
| *Acrostichum aureum* L.             | sofofo (G)      | leaves      | T            | walk early    | 428    |
| *Adenia cissampeloides* (Planch. ex Hook.) Harms | akolebdjou (N) | leaves | T | malaria | 445    |
| *Aframomum melegueta* K.Schum.      | atakounkui (Y,N) | fruit | HB | measles | NC     |
| *Agelaea pentagyna* (Lam.) Baill.   | ahwahazoun (F,G) | leaves | T | stomach ache, intestinal cleanse | NC     |
| *Ageratum conyzoides* (L.) L.       | suyonou (G), legboku (K) | whole plant | T | respiratory problems, fever | 430, 530 |
| *Albizia* cf. *adianthifolia* (Schum.) W.Wight | ayolo (F) | wood | T | asthma | NC     |
| *Aloe macrocarpa* Tod.              | aloys (Fr)      | exudate     | D            | constipation  | NC     |
| *Alternanthera pungens* Kunth        | inchako (T), baglon (A) | leaves | EN, T | walk early, anti-sorcery, malaria | 236, 239, 490 |
| *Ananas comosus* (L.) Merr.         | amadjin (F)     | leaves, whole plant | EA | CBD ka, measles | 582    |
| *Anamperisora viridis* L.           | amadjin (F)     | leaves, whole plant | EA | CBD ka, measles | 582    |
| *Amphilicium leonensis* (Hook.f.) Planch. | adoypo/teple (F), ecama (A) | whole plant | T | cough, malaria | 408, 463 |
| *Anacardium occidentale* L.         | kanghougoto (F,G), canjew (T) | bark | T | cough, respiratory problems, asthma, teething, post-circumcision | 425,257 |
| *Ananas comosus* (L.) Merr.         | ananas (Fr)     | fruit       | T            | malaria       | NC     |
| *Aronnica muriaca* L.               | shaphshap (M)   | leaves      | D            | asthma        | 134    |
| *Anthocleista vogelii* Planch.      | gontoudo (F), goussooudo (G), irakpo (T) | root, wood | T | intestinal cleanse, stomach ache, meconium removal, constipation | 281    |
## Appendix 1: Species cited in childcare questionnaires in Bénin

### Chapter 4

| Botanical Name | Vernacular Name* | Used part | Preparation | Use category* | AMT #* |
|----------------|------------------|-----------|-------------|---------------|--------|
| *Arachis hypogaea* L. | arachide (Fr) | leaves | T | fetus strengthener | NC |
| *Areceae sp.* | gueyo (F,G) | leaves | T | walk early | 427 |
| *Areceae sp.* | itowontö (A) | seeds | | anti-sorcery | 477 |
| *Argemone mexicana* L. | ahondja/wetcheyon (F, G, N, Y), magele (T) | leaves | T, HB, EA | newborn strength, malaria, meconium removal, stomachache, intestinal cleanse, fontanels, fever | 233, 492, 609 |
| *Asteraceae sp.* | aranatebe (T) | leaves | E | constipation | 292 |
| *Azadirachta indica* A.Juss. | neemma/kinimma (F), lili (T) | leaves | T, HB | stomach ache, vomiting, malaria, measles, convulsions | 274 |
| *Baphia nitida* Lodd. | susupeyma (F) | leaves, wood | HB, EA | newborn strength, CBD ka | NC |
| *Barteria cf. nigritana* Hook.f. | okoukou (F,N), okotcho (Y) | bark, leaves | HB | newborn strength, strengthener, premature birth | 451 |
| *Baumia thomningii* Schum. | kloma (F), akuema (A) | leaves | EA, T | toothache, strengthener | 466, 560 |
| *Blighia cf. sapida* K.D.Koenig | lissekii (F) | seed | E | asthma | NC |
| *Blighia cf. unijugata* Baker | agbovian (F, G) | bark | T | diarrhea | NC |
| *Boerhavia diffusa* L. | kasuale (F) | leaves | HB | CBD ka | 467 |
| *Bombax cf. buonopozense* P. Beauv. | alowiaton (F) | exudate, leaves | D, EA | cough, post-circumcision | NC |
| *Bridelia ferruginea* Benth. | honssounkouué (F) | leaves, bark, root | HB, T | CBD atita, strengthener, asthma, walk early, newborn strength, CBD ka, convulsions, post-circumcision | NC |
| *Bryophyllum cf. pinnatum* (Lam.) Benth. | afoman (N), affiman (G) | leaves | T | walk early | NC |
| *Caesalpinia bonduc* (L.) Roxb. | agekwin (A,F,G) | seeds, leaves | AT, T | anti-sorcery, CBD atita, newborn strength, intestinal cleanse, constipation | 517 |
| *Caesalpinia pulcherrima* (L.) Sw. | tegbésu (F), orgueil de chine (Fr) | leaves | HB, T | CBD atita, preventative, convulsions, asthma | NC |
| * Cajanu cajan* (L.) Millsp. | kulikwun, klema (F), pulema (K), kolo (N, T) | leaves | T, HB | measles | 255, 497, 551 |
| *Calotropis gigantea* (L.) Dryand. | wagashima (A, F, K, M), pbento (F) | leaves | T, D, EA | anti-sorcery, cough, umbilical cord, measles, strengthener, asthma | 469 |
| *Calotropis procera* (Aiton) Dryand. | bambamo (T) | leaves | EA | umbilical cord | 285 |
| *Capsicum annuum* L. | piment (Fr), vavofli-fliman (G) | fruit, whole plant | EN, EA, T | toothache, intestinal cleanse, wounds, convulsions | 439 |
| *Carica papaya* L. | pbema (F), Kpinman (N, Y) | seeds, leaves | T, HB, T, D | malaria, strengthen, constipation, fever | NC |
| *Carissa spinarum* L. | ahehwey (F) | whole plant | EA | walk early | NC |
| *Cassia sieberiana* DC. | agbilikopao (T) | wood | T | vermifuge | 280 |
| *Cassia filiformis* L. | asebè (F, G) | whole plant | T, HB | fontanels, strengthener | NC |
| Botanical Name | Vernacular Name* | Used part | Preparation* | Use category* | AMT #* |
|----------------|-----------------|-----------|--------------|---------------|--------|
| Ceratotheca cf. sesamoides Endl. | agboma (F) | leaves | EA | fontanels | NC |
| Chamaecrista mimosaoides (L.) Greene | kinafimitche (F,G,N) | whole plant | T | anti-sorcery | NC |
| Chamaecrista rotundifolia (Pers.) Greene | azima (F) | leaves, whole plant | T | malaria, constipation, newborn strength | NC |
| Chasalia kolly (Schumach.) Hepper | atindjedo (G), okpao (Y), akpa (N) | root, leaves | T, EA, HB | intestinal cleanse, fontanels, post-circumcision | NC |
| Chromolaena odorata (L.) R.M.King & H. Rob. | agatou (F, E, N, T), guelfu (K) | leaves | EA, HB | post-circumcision, fever, headache | 251, 448, 499 |
| Citrullus colocynthis (L.) Schrad. | kakanya (T) | leaves | EA | vermifuge | NC |
| Citrullus lanatus (Thunb.) Matsum. & Nakai | goussi (F,G) | fruit | T | intestinal cleanse, constipation | NC |
| Citrus aurantifolia (Christm.) Swingle | cleman (F,G), citron (Fr) | leaves, fruit, root, bark | T, D, E, A, HB | constipation, intestinal cleanse, measles, convulsions, malaria, stomachache, cough, meconium removal, clear throat of newborn, respiratory problems, vomiting | 264 |
| Citrus sp. | orange (Fr) | skin from fruit | EA | wounds | NC |
| Clausena anisata (Willd.) Hook.f. ex Benth. | gbozoun (F), gbossouazowin (G), arukoumbo (T) | leaves | HB, T, E | CBD atita, constipation, newborn strength, umbilical cord, headache, cough | 260, 426, 442, 454 |
| Cleistopholis patens (Benth.) Engl. & Diels | honsoungoto (F), housinkoman (G) | bark, leaves | T | constipation, stomachache, teething | NC |
| Cleome gynandra L. | khaya (M) | leaves | D | yellow fever, earache | 139, 486 |
| Cleome viscosa L. | akaya (F), kayasu (M) | leaves | M, HB | teething, walk early | 136,604 |
| Clerodendrum cf. capitatum (Willd.) Schumach. & Thonn. | weman/wedo (F,G) | leaves, root | T, HB | CBD ka, CBD atita, malaria, fever | NC |
| Cnestis ferruginea Vahl ex DC. | gbovian | leaves | D, T, HB | diarrhea, measles | 209 |
| Cocos nucifera L. | agodo (F, G) | root | T | malaria, constipation, intestinal cleanse | 370, 461 |
| Cola millenii K.Schum. | aloianon (A) | leaves | T | malaria, fever | NC |
| Combretum cf. grandiflorum G.Don | adoucito (F, G, N) | leaves | T | diarrhea, teething | NC |
| Combretum collinum Fresen. | bodumey (T) | root | D | CBD atita | 294 |
| Combretum micranthum G.Don | kinkiniba (F, G, N, Y) | leaves | EA, D, HB, T | measles | NC |
| Combretum sp. | adouco (F), adoukin (G) | leaves | T, HB | measles, diarrhea, teething, fontanels, anti-sorcery | 400, 405 |
| Commiphora africana (A.Rich.) Endl. | feliyimi (G), origi (T) | leaves, branch | T, AT | cough, convulsions | 434 |
| Convolvulaceae sp. | eveyeye (G) | whole plant | T | cough | 435 |
| Corchorus olitorius L. | crencren (F) | leaves | D | malaria, constipation | NC |
| Costus afer Ker Gawl. | teteglete (F) | leaves | E | protection against accidents | 636 |
| Botanical Name                          | Vernacular Name*          | Used part     | Preparation* | Use category* | AMT #* |
|----------------------------------------|---------------------------|---------------|--------------|---------------|--------|
| Crateva adansonii DC.                  | hontonzouzouin (F, G)     | leaves, root  | HB, T        | post-circumcision, CBD ka, anti-sorcery, intestinal cleanse, malaria | 135, 613 |
| Crescentia cujete L.                   | treci (A), ka (F), Calebasse (Fr) | fruit, leaves | EA, T        | convulsions, CBD ka | 489    |
| Cordalalia cf. retusa L.               | awiyani (F)               | leaves        | EA           | fonts, post-circumcision | NC     |
| Croton gratissimus Burch.              | hémantèdji (F, G), adjekofole (N, Y) | leaves | T, EA, E, HB | anti-sorcery, measles, fever, CBD ka | 456    |
| Cucumis metuliferus E.Mey. ex Naudin   | gboounon (F)              | fruit         | T, A         | meales | NC     |
| Cythamphigumcinernum (L.) H.Rob.       | mayantin (F), houssinkussé (F, G) | leaves, whole plant | EA, D, HB, T | CBD aïta, post-circumcision, walk early, premature birth | 410, 473 |
| Cymbopogon sp.                         | timan (F)                 | leaves        | T            | malaria | NC     |
| Cymbopogon citratus (DC.) Stapf        | citronelle (F, Fr)        | leaves        | T            | intestinal cleanse, strengthener, meconium removal | NC     |
| Cynometra megalophylla Harms           | folagoto (F), bougou (G)  | bark          | HB, T        | CBD aïta, newborn strength | 453    |
| Daniellia oliveri (Rolfe) Hutch. & Dalziel | zanlinkpon (F), ewiaya (N, Y), inya (T) | resin, bark, leaves | HB, T | anti-sorcery, walk early | 286, 462 |
| Dennettia cf. tripetala Baker f.       | iiberi (T)                | fruit         | EA           | umbilical cord | NC     |
| Desmodium velutinum (Willd.) DC.       | trèdoavohou (F, G)        | leaves        | T            | asthma, cough, diarhhea, fontanels, teething | 415, 468 |
| Dialium guineense Willd.               | aituey (M)                | leaves        | T            | malaria | 148    |
| Dichapetalum madagascariense Poir.     | gbaglo (A, F, G)          | leaves        | T, HB        | malaria, fever, convulsions, measles, CBD ka | NC     |
| Dicrinitchys cinerea (L.) Wight & Arn. | badawouin (F)             | root          | T            | meales | NC     |
| Dracaena fragrans (L.) Ker Gawl.       | anyama (K)                | leaves        | EA           | ear ache | 533    |
| Dysphania ambrosioides (L.) Mosyakin & Clements | godo (F), azobidi (K) | whole plant, leaves | HB, EA, T | newborn strength, post-circumcision, asthma, fontanels, vermiufuge | 557    |
| Eclipsa prostrata (L.) L.              | zoma (F)                  | leaves        | HB, T        | post-circumcision, malaria | 596    |
| Euphorbia cymosa Thonn.                | kanbala (F), miyonman (G) | leaves        | T            | diarhhea, malaria, fever | 460    |
| Elaeis guineensis Jacq.                | tjotjof, huile rouge (Fr), inkiyo (T) | oil from seed | EA, T | wrinklely newborns, fontanels, convulsions, wounds, fever, measles, respiratory problems, umbilical cord | NC     |
| Entada gigas (L.) Fawc. & Rendle       | gbagbla (F)               | seeds         | T, HB        | constipation, intestinal cleanse, constipation | 418    |
| Erythrina cf. senegalensis DC.         | phaklesi (F)              | leaves        | HB           | diarhhea | 559    |
| Erythrophoca anomala (Juss. ex Poir.) Prain |            | leaves        | T            | teething | 495    |
| Eucalyptus sp.                         | eucalyptus (Fr)           | leaves        | T, HB        | cough, respiratory problems, malaria | NC     |
| Euphorbia birta L.                     | anossikan (G)             | whole plant   | HB           | meales | NC     |
| Evolulus cf. alsinoides (L.) L.         | droman (G)                | leaves        | T            | teething | NC     |
| Fabaceae sp.                           | vsou                      | seeds         | E, EA        | diarhhea, fontanels | NC     |
| Ficus cf. lutea Vahl                   | adako (T)                 | bark          | T            | diarhhea | NC     |
| Ficus exasperata Vahl                  | igpi (T)                  | sap           | EA           | umbilical cord | 252    |
| Botanical Name                  | Vernacular Name | Used part | Preparation | Use category | AMT # |
|-------------------------------|-----------------|-----------|-------------|--------------|-------|
| Ficus sur Forss.              | voma (F), ow cyt o (F, G), okpoto (Y) | leaves, bark | HB, T       | fever, strengthener, premature birth | 579   |
| Flacourtia indica (Burm. f.) Merr. | agbonkadje (F) | leaves, root | T, HB       | diarrhea, measles | NC    |
| Flueggea virosa (Roxb. ex Willd.) Royle | tchekè-tchekè (F), ayiku (T) | leaves | T, HB, E, D | convulsion, strengthener, meconium removal, convulsions, intestinal cleanse, teething, malaria | 276, 569 |
| Garcinia kola Heckel          | ahowe (F)       | seeds     | T, HB       | newborn strength, intestinal cleanse | NC    |
| Garcinia sp.                  | ahowé/kola (F)  | leaves, seeds | HB, T, E   | newborn strength, malaria, anti-sorcery, fontanels, diarrhea | 419   |
| Gardenia ternifolia Schumach. & Thonn. | dalplasou (F)  | leaves    | D           | malaria, fetus strengthener | NC    |
| Gladiolus dalenii Van Geel    | baka (F)        | tuber     | E           | asthma       | NC    |
| Glycine max (L.) Merr.        | soja (F)        | seeds     | D           | constipation  | NC    |
| Gymelina cf. arborea Roxb.    | fiofiotin (F)   | leaves    | T           | constipation  | NC    |
| Hackelochloa granularis (L.) Kuntze | azosongo (F, G) | whole plant | T       | strengthener | NC    |
| Heliotropium indicum L.       | kokolosutepadaj (F), koulodin (N) | whole plant | HB, T     | fever, CBD atita, CBD ka | 447   |
| Heterotis cf. rotundifolia (Sm.) Jacq.-Fél. | hèhèman (F) | leaves | T | anti-sorcery, fever, convulsions, malaria, post-circumcision | NC    |
| Hibiscus acetosella Welw. ex Hiern | hungbe (A), yangba (F) | leaves | T | strengthener, malaria | 465, 594 |
| Hibiscus sp.                  | podye (M)       | leaves    | T           | malaria, fever | NC    |
| Hibiscus suarrattensis L.     | kpofin          | whole plant | T       | anti-sorcery | NC    |
| Hoslundia opposita Vahl       | klongble (G)    | leaves    | HB          | strengthener  | 437   |
| Hygrophila auriculata (Schumach.) Heine | hosugoto (K) | bark | T          | asthma       | 496   |
| Hymenocardia acida Tul.       | fofrya (T)      | leaves    | E           | teething      | NC    |
| Hypis nauseolens (L.) Poit.    | sonsupey peyma/koueflou (F), kouloubi (T) | leaves | HB, T, E   | fever, mosquito repellant, diarrhea, CBD atita, CBD ka, dysentery | 291, 406, 472 |
| Isacina cf. trichantha Oliv.   | agebebema (F)   | leaves    | T           | diarrhea      | NC    |
| Imperata cf. cylindrica (L.) Raeusch. | seman (F, G), eweekan (N) | leaves | T | teething, respiratory problems | NC    |
| Indigofera sp.                | ahoobey (A)     | leaves    | T           | strengthener, constipation | 366   |
| Indigofera sp.                | fonvi (F,G,N)   | whole plant | T, HB    | walk early    | 429   |
| Jatropha cf. curcas L.         | babaki (A), ajakpotu (F), eweakporo (N, Y), kitipopo (T) | leaves, branch | T, HB, SB   | malaria, fever, intestinal cleanse, convulsions | 659   |
| Jatropha multifida L.          | welèman (F)     | leaves    | T           | CBD atita    | 403   |
| Jatropha sp.                  | jatrophado (N)  | root      | T           | respiratory problems | NC    |
| Justicia flava (Vahl) Vahl    | tchoutchouglochou (F, G) | whole plant | E, HB    | anti-sorcery, newborn strength, fontanels | 633   |
| Kalanchoe crenata (Andrews) Haw. | afaman (E, Y), adodo (T) | leaves | EA, D      | umbilical cord, cough | 261   |
| Kedrostis foetidissima (Jaq.) Cogn. | tdiiyoman (F, G) | leaves | T | convulsions, malaria, fever | NC    |
| Botanical Name | Vernacular Name * | Used part | Preparations | Use category | AMT # |
|----------------|-------------------|-----------|--------------|--------------|-------|
| Khaya senegalensis (Desv.) A.Juss. | zounsa (F, N), agao (T) | bark, leaves | HB, T, EA | newborn strength, walk early, convulsions, diarrhea, malaria, CBD | 244, 284 |
| Lannea acida A.Rich. | zuzugoto (F), aku (T) | bark | HB, T | walk early, newborn strength | 282 |
| Lecaniodiscus cf. cupanioides Planch. ex Benth. | ganoum (F, G) | leaves | HB | premature birth | 270 |
| Lawsonia inermis L. | laliman (F, G) | leaves | T | malaria | 270, 402 |
| Lericodiocrotalum uniflorum (Desv.) Benth. | houman (F) | leaves | HB, T, EA | diarrhea | 212, 364, 421, 432 |
| Milicia excelsa (Welw.) C.C.Berg | loko (A, F) | leaves, root | HB, T, EA | meconium, diarrhea | 243, 436, 452 |
| Millettia thonningii (Schum. & Thonn.) Baker | ahouman (F, N, Y) | leaves | HB, T | malaria | 433 |
| Momordica charantia L. | yinsikin (F), assossikan (G), tchati (T) | whole plant, leaves | HB, T, EA, E | measles, diarrhea, antibiotic | 149, 254, 409, 525 |
| Monodora cf. tenuifolia Benth. | sonoufok (F, G) | leaves | HB | meconium, diarrhea, malaria, New-born strength, walk early | 62, 98, 254, 552 |

* AMT: African Medicine Therapy; NC: Not Cited.
| Botanical Name                        | Vernacular Name* | Used part | Preparation | Use category                                      | AMT #* |
|--------------------------------------|------------------|-----------|-------------|---------------------------------------------------|--------|
| Monodora myristica (Gaertn.) Dunal    | sasalinkoun (F)  | seeds     | EA, T       | umbilical cord, post-circumcision, constipation, intestinal cleanse, toothache, preventative | NC     |
| Morinda lucida Benth.                | atileysibey (A), honswuey (K), kwenso (M) | leaves | HB, T, D | convulsions, constipation, intestinal cleanse, fever | 133, 365, 537 |
| Moringa oleifera Lam.                | kpayédéé (F), kpatinman (F, G), batamavi (K) | leaves | DR, T, HB, D | headache, diarrhea, fever, headache, anti-sorcery | NC     |
| Mucuna cf. sp.                      | feman (F)        | leaves    | HB          | newborn strength                                   | NC     |
| Mucuna pruriens (L.) DC.             | dukey (A), ewe aghakila (N) | leaves | A, HB, T | measles, diarrhea                                 | 488, 450 |
| Musa sp.                             | banane (Fr)      | leaves    | T, D        | post-circumcision, constipation, malaria, newborn strength, fever, anti-sorcery | NC     |
| Newbouldia laevis (P.Beauv.) Seem.   | adama (F), akokoun (F, G, T), desey sigema (M) | leaves, seeds | EA, T, D, HB | malaria, convulsions                              | 279     |
| Nicotiana tabacum L.                | azoman (F), tabla (N), ayureawe (T) | leaves | T, EA | sore throats, wounds, asthma, cough, fever, post-circumcision, CBD atita, constipation, meconium removal, newborn strength, diarrhea, fontanels, CBD ka, measles, strengthener | NC     |
| Ocimum americanum L.                | hisishi (F), fio (G) | leaves, whole plant | EA, T, HB, EN, | post-circumcision, CBD atita, premature birth, convulsions, walk early, asthma, cough, enema, intestinal cleanse, constipation, meconium removal | 544     |
| Ocimum basilicum L.                 | akohoun (F, G, Y) | leaves    | T, D        | constipation                                      | NC     |
| Ocimum gratissimum L.               | tchay (F, G, N), koumoba (T) | leaves, whole plant | T, HB, EA, E, EN | post-circumcision, CBD atita, premature birth, convulsions, walk early, asthma, cough, enema, intestinal cleanse, constipation, meconium removal | 272, 498 |
| Ocimum sp.                          | kessou-kessou (F, G) | whole plant, leaves | T, D, HB | antibiotic, constipation, anti-sorcery, diarrhea, post-circumcision, malaria, newborn strength, fever | NC     |
| Olax subcorpusidea Oliv.            | mitindo (F)      | root      | T           | intestinal cleanse, constipation                   | NC     |
| Oldenlandia cf. affinis (Roem. & Schult.) DC. | ahonman (F, G) | leaves | EA, HB    | fontanels, premature birth                        | NC     |
| Opuntia sp.                         | cactus (Fr)      | root, leaves | T           | cough                                              | NC     |
| Pancratium trianthum Herb.          | kouyoman (F, G) | leaves, stem | T           | asthma, cough, anti-sorcery                       | 210, 422 |
| Parkia biglobosa (Jacq.) G.Don       | awe (F, G), igba (T) | branch, bark, leaves | HB, T   | strengthener, constipation, respiratory problems, convulsions, diarrhea, walk early, anti-sorcery, measles | NC     |
| Passiflora foetida L.               | avounyinmitoé (F) | whole plant | T           | CBD ka                                            | NC     |
| Botanical Name                  | Vernacular Name | Used part | Preparation | Use category | AMT #* |
|-------------------------------|----------------|-----------|-------------|--------------|--------|
| *Paullinia pinnata* L.         | ahichan (A), hedoulif/lokoman (F, G), ganganizema (M) | leaves, root | HB, T | diarrhea, newborn strength, convulsions, post-circumcision, cough | 114, 146 |
| *Pavetta cf. crassipes* K.Schum. | gongwako (T) | leaves | T | malaria | NC |
| *Pavetta corymbosa* (DC.) F.N.Williams | lohou (F) | leaves | T | malaria, newborn strength | NC |
| *Pennisetum cf. glaucum* (L.) R.Br. | mil (Fr) | seeds | E | measles | NC |
| *Pergularia daenia* (Forsk.) Chiov. | bonuekey (A), awiniulunksiewa (M) | leaves | EA | fontanels, cough | 493 |
| *Periploca calophylla* (Baill.) Robert | homa/asobokan (F) | leaves | EA | newborn strength, umbilical cord | 475, 583, 608 |
| *Persea americana* Mil. | avocamanhouhou (F) | leaves | D | asthma | NC |
| *Phyllanthus amarus* Schumach. & Thonn. | hlinwèh (F), tehissso (N, Y), aibiso (T) | whole plant, leaves | T | constipation, meconium removal, malaria, newborn strength, intestinal cleanse, vermifuge, diarrhea | NC |
| *Physalis cf. angulata* L. | korogba (F, N), longba (Y) | whole plant | T, HB | constipation, CBD ka, CBD atia, measles | NC |
| *Piper guineense* Schumach. & Thonn. | piment du guinea (Fr), injaive (T) | fruit | DR, T, D, EA, HB | headache, CBD ka, CBD atia, fontanels, asthma, strengthener, constipation | 658 |
| *Plectranthus monostachyus* (P.Beauv.) B.J.Pollard | koumoba (T) | leaves | T | constipation | 242 |
| *Pleurotus tuber-regium* (Rumph. ex Fr.) Singer 1951 | aisankoum (F) | fungus | E | asthma | 601 |
| *Portulaca grandiflora* Hook. | dri (G) | whole plant | T | teething | NC |
| *Proopis africana* (Guill. & Perr.) Taub. | kaké (F, G) | wood | HB, T | newborn strength, walk early, constipation, fever | 401 |
| *Pseudocedrela cf. kotschyi* (Schweinf.) Harms | ndagigi (T) | leaves | T | vermifuge | NC |
| *Psidium guajava* L. | kinkouman (F, G, N) | leaves | T, EA, D | diarrhea, post-circumcision, asthma | NC |
| *Psychotria psychotrioides* (DC.) Roberty | atindobousa (F) | bark | HB | post-circumcision | NC |
| *Psychotria vogeliana* Benth. | deblogo (G) | leaves | T | post-circumcision | 414 |
| *Pteleopsis suberosa* Engl. & Diels | kulikuligoto (F) | bark, leaves | T, HB | CBD atia, CBD ka, newborn strength, measles | NC |
| *Pterocarpus erinaceus* Poir. | kosso (G) | bark | T | walk early | NC |
| *Pterocarpus santalinoides* DC. | gbengbè (F, G), begbema (M) | leaves | T, HB, D | diarrhea, newborn strength, constipation, CBD atia | 138, 634 |
| *Pupalia lappacea* (L.) Juss. | tredoagbokouk (F) | seeds | EA | fontanels | 455 |
| *Psycanthus cf. angolensis* (Welw.) Warb. | yaya (F) | leaves | T | asthma, cough | NC |
| *Raphia hookeri* G. Mann & H. Wendl. | dekui/aliadekou (F, G) | seeds | T, HB | fontanels | NC |
| *Raphia sp.* | ramo (F) | leaves | C | anti-sorcery | NC |
| *Rauvolfia vomitoria* Aizel. | vonmansi (G) | leaves | HB, T | fontanels, fever | 514 |
| Botanical Name          | Vernacular Name       | Used part       | Preparation | Use category | AMT # |
|-------------------------|-----------------------|-----------------|-------------|--------------|-------|
| *Remora maritima* Aubl. | houyin/housso (F, G)  | whole plant     | T           | teething     | 417   |
| *Rhaphiostylis beninensis* (Hook.f, ex Planch.) | gbagblakan (F, G)    | wood            | T           | newborn strength, constipation, intestinal cleanse | NC    |
| *Ricinodendron hookerianum* Planch. ex Benth. | patiardoum (F)       | leaves          | EA          | fever, stomachache | NC    |
| *Ricinus communis* L. | fefekoupa (T)        | leaves          | SB, D       | post-circumcision, diarrhea | 411   |
| *Rourea coccinea* (Schumach. & Thonn.) Benth. | vikplonbaman (G), amedje (N) | leaves | T           | post-circumcision, measles | 441   |
| *Rytigynia senegalensis* Blume | gbadema (F, N, Y)     | leaves          | T           | malaria, measles | HB, T |
| *Sansevieria liberica* Gérôme & Labroy | kpohiando/kponman (F) | root, leaves    | T           | malaria, measles | 407   |
| *Sarcocephalus latifolius* (Sm.) E.A.Bruce | kudo (F), umbha (T)  | root, leaves    | T           | malaria, measles | 411   |
| *Senna alata* (L.) Roxb. | amasou (F), dumadòsogomè (K) | leaves | T, D       | intestinal cleanse, constipation, meconium removal | 518   |
| *Senna hirsuta* (L.) H.S.Irwin & Barneby | batomayi (F)         | leaves          | HB          | fever        | 471   |
| *Senna obtusifolia* (L.) H.S.Irwin & Barneby | kpanhouman (F)       | leaves          | EA          | umbilical cord, wounds | 507   |
| *Senna occidentalis* (L.) Link | agolikan (F), anajabulo (T) | leaves | T , EA, HB | diarrhea, fontanels, newborn strength, malaria, fever | 241, 600 |
| *Senna siamea* (Lam.) H.S.Irwin & Barneby | zangla/cassia (A, F), acacia (G, T) | leaves | T , HB | malaria, constipation | 273, 459 |
| *Sesamum indicum* L. | sesame (Fr)           | seeds           | E           | teething     | NC    |
| *Sida cf. rhombifolia* L. | ghema (M)            | leaves          | EA          | toothache    | NC    |
| *Solanum aethiopicum* L. | gboman/gble (F)      | leaves          | T , HB      | diarrhea, post-circumcision | 598   |
| *Solanum americanum* Mill. | mori (T)             | leaves          | D           | cough        | 262   |
| *Solanum dasyphyllum* Schumach. & Thonn. irwawaudi (T) | leaves          | D           | EA, HB      | cough        | 240   |
| *Sorghum bicolor* (L.) Moench | adako (F)            | leaves          | T           | toothache    | NC    |
| *Sorghum sp.* | hokoweman (G)        | leaves          | T           | strengthener | NC    |
| *Stachytarpheta cayennensis* (Rich.) Vahl | alotrohe (G)        | whole plant     | T           | diarreta, teething | 440, 635 |
| *Stipularia africana* P. Beauv. | towedou (F, G)      | root, leaves    | T           | cough, convulsions, malaria, fever | 424   |
| Botanical Name | Vernacular Name* | Used part | Preparation* | Use category* | AMT #* |
|----------------|------------------|-----------|--------------|---------------|--------|
| Strophanthus hispidus DC. | afeyfey (T) | leaves | HB | malaria | 358 |
| Strophanthus sp. | tegbesu (F) | leaves | E, T | convulsions | 588 |
| Stylosanthes erecta P.Beauv. | aduma (A, F) | whole plant, leaves | HB, T | teething | 406 |
| Syzygium aromaticum (L.) Merr. & L.M.Perry | atinkenbodata (F, G, M, N) | flower buds, bark | D, HB, T, EA | constipation, newborn strength, post-circumcision, umbilical cord, intestinal cleanse, preventative | NC |
| Syzygium guineense (Willd.) DC. | mlanmi (G) | leaves | T | CBD atita | 431 |
| Tectona grandis L.f. | teekma (F, M) | leaves | HB | newborn strength | NC |
| Terminalia glaucescens Planch. ex Benth. | alo (F), aloaton (G) | root | T, HB | asthma, cough, post-circumcision, CBD atita, anti-anti-sorcery | NC |
| Tetrapleura tetraptera (Schum. & Thonn.) Taub. | lindja (F) | fruit | T | asthma | NC |
| Thonningia sanguinea Vahl | atinmahudè (F, G), oyo (N, Y) | whole plant | T | respiratory problems, asthma, cough, constipation, teething | NC |
| Tithonia diversifolia (Hemd.) A.Gray | boto (F) | leaves | EN, HB | convulsions | 278 |
| Terebra orientalis (L.) Blume | afr (N, T, Y) | leaves | T, SB | walk early, fever | 258 |
| Tribulus terrestris L. | gendarme (F) | whole plant | T | teething | 420 |
| Tridax procumbens (L.) L. | kpokpo (G, N, Y) | whole plant | A, T, HB | convulsions, strengthener | 478 |
| Triumphetia rhomboidea Jacq. | adjatou (F) | leaves | EA | post-circumcision | NC |
| unidentified (AMT 141) | weyduemey (M) | whole plant | HB | anti-sorcery | 141 |
| unidentified (AMT 265) | kanchino (T) | bark | T | diarrhea | 265 |
| Uania picta (Jacq.) DC. | aosoin (F) | leaves | T | malaria, respiratory problems, asthma, cough | 416 |
| Utricularia cf. spiralis Sm. | kologakolesi (T) | leaves | HB | fetus strengthener | NC |
| Uvaria cf. chamae P.Beauv. | aylahado/aylaham (F,G, M, N) | root, leaves | T | convulsions, constipation, CBD atita, asthma, malaria, fever, newborn strength | NC |
| Vepris cf. verdoorniana (Exell & Mendonça) Mziray | akode (F,G) | leaves | T | malaria, constipation, intestinal cleanse | NC |
| Vitellaria paradoxa C.F.Gaertn. | limangoto (F,G), beur de karite (Fr) | seeds, bark | T, EA | cough, respiratory problems, diarrhea | NC |
| Waltheria indica L. | avoudido (F), avidido (G) | root, whole plant | T | convulsions | 423 |
| Xylopia aethiopica (Dunal) A.Rich. | kpedje (F, G, M, N), arn (T) | fruit, bark | EA, D, T, HB, SB | umbilical cord, intestinal cleanse, constipation, post-circumcision, malaria, toothache, diarrhea, meconium removal, stomachache, fever, strength | NC |
| Zanthoxylum sp. | achanhanwou (F), heja (M) | leaves | T | diarrhea, intestinal cleanse, constipation | 147, 457 |
| Botanical Name                                      | Vernacular Name*          | Used part | Preparation* | Use category* | AMT #* |
|---------------------------------------------------|---------------------------|-----------|--------------|---------------|--------|
| *Zanthoxylum zanthoxyloides* (Lam.) Zepern. & Timler | hedou (F)                 | root      | T            | diarrhea      | NC     |
| *Zapoteca portoricensis* (Jacq.) H.M.Hern.        | azonkidjado (F), ingbanu (T) | root      | EN, T        | intestinal cleanse, convulsions | 245    |
| *Zea mays* L.                                     | mais (Fr)                 | fruit     | T, E         | diarrhea, CBD ka, measles          | NC     |
| *Zingiber officinale* Roscoe                      | dote (F), gingembre (Fr), atalye (T) | rhizome   | T, EA, EN, D | asthma, fontanels, intestinal cleanse, constipation | NC     |

a Local languages are abbreviated: (A)= Adja; (F)= Fon; (Fr)= French; (G)= Goun; (K)= Kotafon; (M)= Mina; (N)= Nago; (T)= Tcha; (Y)= Yoruba.
b Preparations are abbreviated: (A)= soaked in alcohol; (AT) attach; (C)= ceremony; (D)= drink; (DR)= drops; (E)= eat; (EA)= external application; (EN)= enema; (HB)= herbal bath; (M)= massage; (SB)= steam bath; (T)= tea.
c Use category abbreviations are as follows: CBD= cultural bound disease.
d Botanical voucher number and collector initials; NC= not collected.
Appendix 2: Species cited in childcare questionnaires in Gabon

| Botanical Name                      | Vernacular Name                        | Used part                     | Preparation | Use category | AMT #                  |
|-------------------------------------|----------------------------------------|-------------------------------|-------------|--------------|------------------------|
| Acalypha paniculata Miq.            | oekoenkoenakoen (F)                    | leaves, bark                  | A           | CBD onkoe-abiel | NC                     |
| Acanthus montanus (Nees) T. Anderson| nda (F)                                | leaves                        | D           | cough         | 759, 856               |
| Acmella caulirhiza Delile            | andongsie/andusi (F)                   | leaves, root                  | D           | DR           | D, E, EN, HB           |
| Aframomum giganteum (Olive & D.Harb.)K.Schum. okosowon (Ok.) |             |                               |             |              | 780, 1060, 1275        |
| Aframomum melegueta K.Schum          | ondodo/ondon/ndong (F), petite          | leaves, root                  | D           | DR           | NC                     |
| Aframomum sp.                       | adzom ebaja/ajom/bisom/eson (F)        | herb, leaves, root, root      | DR, D       | E            | EN, HB                 |
| Ageratum conyzoides (L.) L.          | ikukwey (F), hedilikii/hedoki/kombavingi(M), etombijoro (Om), mambi matap/manmibatabe (P) | leaves, root, root            | D, EN, HB   | EN, HB        | 855, 2098              |
| Albizia sp.                          | vovo-esak (F)                          | whole plant                   | EN          |              | 1228                   |
| Alchornea cordifolia (Schumach. & Thonn.) Müll.Arg. | agbuin/nkabi/unsusum abui (F) | leaves                        | D, EN, SB, EN | EN            | 871                    |
| Alchornea floribunda Müll.Arg         | alan/alan-bwikili  (F)                 | leaves, root                  | HB, EN      |              | 871                    |
| Allium cepa L.                      | onion (Fr)                             | stem                          | M           |              | 871                    |
| Annona muricata L.                   | corosolle (F), corossolier (Fr)        | leaves, bark                  | SB,D, EN    |              | 871                    |
| Anthocleista cf. schweinfurthii Gilg | ajinebe (F)                            | bark                          | EN, HB      |              | 871                    |
| Arachis hypogaea L.                  | eba-owun (F), huile d'arachide (Fr)    | seed                          | M           |              | 871                    |
| Asparagus warneckei (Engl.) Hutch.   | mincoga mikou (F)                      | root                          | D, E, C     |              | 871                    |
| Botanical Name | Vernacular Name | Used part | Preparation | Use category | AMT # |
|---------------|----------------|-----------|-------------|--------------|-------|
| *Baillonella toxisperma* (Roxb.) Baill. | Pierre oabi (B), azap (F), moabi (Fr), oabey (Os) | bark, leaves | T, EN, SB, HB, CBD lose rouge, post-circumcision, fever | D | 837, 1066, 1303 |
| *Bambusa vulgaris* Schrad. | muguisa | bark | | T | NC |
| *Barteria fistulosa* (Mast.) K. Schum. | boviongo (B), engokom/ensangom/nesabe (F) | bark | EN | T | 1170 |
| *Berlinia bracteosa* Benth. | fromodo/eybiara (M) | bark | D | EN | 852 |
| *Bidens pilosa* L. | biele/oyilee (Ob) | leaves | EA | EB | 1154, 1173 |
| *Boerhavia diffusa* L. | katakala (Ob) | root | EN | T | 1170 |
| *Brideli atroviridis* Müll.Arg. | monyombo (B) | bark | EN | T | 1269 |
| *Brillantaisia lancifolia* Lindau | ndolo (F) | whole plant | EN, M, T | | |
| *Camptostylus mannii* (Oliv.) Gilg | abumbu/ebubun/ebubung (F) | leaves | EN | T, HB, A, M, E, D | 852 |
| *Canna indica* L. | lekwanzo (F) | leaves | EC | | 1061 |
| *Capsicum annuum* L. | oendodo/okam (F), petite piment/piment/piment rouge (Fr) | leaves, fruit | EN | | 806 |
| *Carica papaya* L. | papaya (Fr) | leaves | T, HB, D, S, EC | | 988 |
| *Carpolobia alba* G.Don | onong (F) | root, leaves | EN | | 779, 1056, 1255 |
| *Carpolobia* sp. | onong (F) | root | S | | NC |
| *Cecropia peltata* L. | assong/asung (F) | bark | EN, D | | |
| *Ceiba cf. pentandra* (L.) Gaertn. | guna (M) | bark | E, D | | |
| *Chaetocarpus africanus* Pax | otikancha (Ob) | leaves | EA | | 1170 |
| *Cissus cf. aralioides* (Welw. ex Baker) Planch. | ngun-ele (F) | leaves | EA | | NC |
| *Cissus cf. dewevrei* De Wild. & T. Durand | otoektoek (F) | leaves | EA | | 860 |
| *Citrus aurantiifolia* (Christm.) Swingle | alas/olass (F), citron (Fr) | leaves, fruit | EN | | 1059, 1168 |
| *Citrus* sp. | canne acid (Fr) | HB | | | NC |
| *Clerodendron* sp. | bejim elok/beyemalol/ebele bejium (F), reine des herbes (Fr) | leaves | EA, A, M | | }

**Fertility and Fontanels - Chapter Four**
Appendix 2: Species cited in childcare questionnaires in Gabon

| Botanical Name | Vernacular Name* | Used part | Preparation* | Use category* | AMT # |
|----------------|------------------|-----------|--------------|---------------|-------|
| *Coffea canephora* Pierre ex A.Froehner | café (Fr) | leaves | SB | fever | 1158 |
| *Cogniauxia podolaena* Baill. | | | | | 1229 |
| *Cola* cf. *digitata* Mast. | hekoa (M) | bark | HB | measles | NC |
| *Colocasia esculenta* (L.) Schott | tara (M) | bark | D | CBD la rate | NC |
| *Combretum aphanopectalum* Engl. & Diels | sissa (F) | leaves | EA | CBD fesse rouge | 859 |
| *Costus ligularis* Baker | mukusa rouge (B) | whole plant | T | cough | 1297 |
| *Costus sp.* | myen (F), canne sauvage (Fr), obong (T) | leaves, stems, whole plant | D, EN, M, EA, S, D, E, EA | post-circumcision, cough, fetus strengthener, fontanels | 874 |
| *Coula edulis* Baill. | ohoungou (M) | bark | E | diarrhea | NC |
| *Croton cf. oligandrus* Pierre ex Hutch | obumba | EN | CBD la rate | NC |
| *Croton mayumbensis* J.Léonard | dibamba (B) | bark | HB | fetus strengthener, CBD pogha | 1264 |
| *Cucumeropsis mannii* Naudin | inchoko/jokou (B), concombre traditionelle (Fr), joka (Ob) | seed, stem, leaves | E, V, DR, HB | diarrhea, walk early, growth stimulation, cough, fetus strengthener | NC |
| *Cyathula prostrata* (L.) Blume | chatee (B), kolo/kolok (F), oborbe grande feuille (Fr) | leaves, seeds, flowers | E, EA | diarrhea, fontanels | 831, 893, 1294 |
| *Cyclicodiscus gebrunensis* Harms | odouma (B), edum (F) | bark | D, HB, EN | malaria, vermifuge | 1301 |
| *Cymbopogon citratus* (DC.) Stapf | tisane (Fr) | leaves | T, EN | malaria, measles | NC |
| *Cymbopogon sp.* | citronelle (Fr) | leaves | D, T, SB | malaria | NC |
| *Dacryodes cf.*, sp. | unguu (B), ebo (C) | bark | E | diarrhea | 1278 |
| *Daniellia klainei* A.Chev. | owengey (B) | bark | HB | CBD pogha | 1280 |
| *Desmodium adscendens* (Sw.) DC. | oborbe petit feuille (Fr) | leaves | EA | fontanels | 833 |
| *Dioscorea bulbifera* L. | bibuma abang (F) | tuber | | malaria | 1207 |
| *Dioscorea sp.* | nyam (F) | tuber | D | CBD la rate | NC |
| *Distemonanthus benthamianus* Baill | eyem (F) | bark, leaves | HB, D, E | newborn health, fetus strengthener, fontanels | NC |
| *Dracontium fragrans* (L.) Ker Gawl. | alen-olpo (F) | bark | EN | walk early | 1235 |
| *Duboisia cf. macrocarpa* Bocq. | abak (F) | leaves | EN | walk early | NC |
| *Dyphania ambrosioides* (L.) Mosyakin & Clemants | ontchouchoulou (Ob) | whole plant | SB | malaria | 1175 |
| *Eclipta prostrata* (L.) L. | ivainamoye (B), movinindera/oyira (Os) | whole plant, leaves | EA, M | CBD fesse rouge, fever, hemorrhoids | 1167, 1273, 1403 |
| Botanical Name                      | Vernacular Name* | Used part       | Preparation | Use category                  | AMT # |
|-----------------------------------|------------------|-----------------|-------------|-------------------------------|-------|
| *Elaeis guineensis* Jacq.         | esong/onbonmiban (F), huile de palme (Fr) | heart, fruit, seeds | E, EA, M | fetus strengthener, fontanels, CBD la rate, heat rash, post-circumcision, sores, intestinal cleanse, meconium removal, umbilical cord, CBD fesse rouge, measles | NC    |
| *Eletusine indica* (L.) Gaertn.   | alekinenou (Om)  | root            | M           | CBD la rate                   | 1164  |
| *Emilia cocinea* (Sims) G.Don     | mungusungusu (B), alanopo/olonvoe (F) | leaves, whole plant | D, EC, HB, EA | measles, newborn health, umbilical cord, walk early, CBD fesse rouge, meconium removal | 1247, 1285 |
| *Erythrina droogmansiana* De Wild. & T.Durand | esoesoeck/esok (F) | bark             | M, EN, D, C | CBD la rate, anti-sorcery    | 881    |
| *Ficus eserata* Vahl              | ako (F)          | bark            | EA, D       | umbilical cord, cough, fetus strengthener | 1239  |
| *Ficus mucuo* Welw. ex Ficalho    | ekoko/ekokok (F) | leaves          | EN          | colic, meconium removal      | NC    |
| Fleroya cf. ledermannii (K.Krause) Y.F.Deng | otzeyzan (F) | bark             | M           | CBD bad lungs                 | NC    |
| *Geophila aferzii* Hiern          | koudou/kudou (B) | whole plant, leaves | V, EA       | CBD la rate                   | 1308  |
| *Gossypium barbadense* L.         | coton (F)        | leaves          | D           | asthma                        | NC    |
| *Guibourria tessmannii* (Harms) J.Leonard | oveng (F) | bark, resin    | HB, C       | newborn health, anti-sorcery | NC    |
| Harungana madagascariensis Lam. ex Poir. | atuin (F) | bark, leaves | SiB, EN, DR, HB, | post-circumcision, diarrhea, CBD fesse rouge, post-circumcision, intestinal cleanse, CBD la rate, measles | 778    |
| *Heterotis decumbens* Jacq.-Fél. | sangancho (Om)  | leaves          | T           | malaria                       | 1166  |
| Hibiscus acetosella* Welw. ex Hiern | esang (F), l'oseille (Fr) | flower          | M           | CBD fesse rouge               | 885    |
| Hibiscus sp.                      | osaill (F), ozai (Os) | leaves, whole plant | EA, V | fontanels, walk early        | NC    |
| Irvingia gabonensis* (Aubry-Lecomte ex O’Rorke) Baill. | mangue sauvage (Fr), mucebe (P) | bark, leaves | M, D | CBD la rate, fetus strengthener, fever | NC    |
| *Jatropha gossypifolia* L.         |                  |                 |             |                               |       |
| Kalanchoe crenata* (Andrews) Haw. | ivivuma (F), odikikya (M), landunga (Ob), edokoa (Os), majujuja (P), jejoujiga, jewa (T) | leaves, whole plant | D, DR, EA | respiratory problems, cold, ear disorders, umbilical cord, antibiotic, cough, flu | 758, 979 |
| Lantana camara L.                 |                  |                 |             |                               | 1188  |
| Laporteaestuans* (L.) Chew         | tak-akun (F)     | leaves          | T           | malaria                       | 1244  |
| Lantinthera africana* P.Beauv.     | mundungu (B)     | bark            | HB          | growth stimulation, strengthen fetus | NC    |
| *Leea guineense* G.Don             |                  |                 |             |                               | NC    |
| Leguminosae cf. sp.               | rekoa (B)        | bark            | D           | malaria                       | 1265  |
| *Leptacina mannii* Hook.f.         | ewas wasakulu (F), bois des os (Fr) | bark, leaves    | HB, D       | growth stimulation            | 814    |
| Lygodium cf. microphyllum* (Cav.) R. Br. | nzalanu (F) | leaves          | E           | diarrhea                      | NC    |
| Macaranga barteri Müll.Arg.        | echemey (B)      | bark            | T           | walk early                    | 1288  |
| Macaranga saccefera Pax            | mopoapo (B)      | bark            | HB          | fetus strengthener, CBD pogha | NC    |
### Appendix 2: Species cited in childcare questionnaires in Gabon

| Botanical Name | Vernacular Name | Used part | Preparation | Use category | AMT # |
|----------------|----------------|-----------|-------------|--------------|-------|
| Macaranga spinosa Müll.Arg | macaranga/mungembe (B), lasus (F) | leaves, bark | EC, EN, T | malaria, walk early, meconium removal, respiratory problems | 1064 |
| Maesopsis eminii Engl. | enkangalle (F), mangobey (M) | bark | D, EN, T, HB | cough, CBD fesse rouge, malaria, CBD la rate, CBD pogha | NC |
| Mangifera indica L. | endok (F), mangue (Fr) | leaves, bark, root | T, SB, EN, D | malaria, hemorrhoids, diarrhea, fever, CBD fesse rouge | NC |
| Manihot esculenta Crantz | menza (F), manioc (Fr), ayaga (Ob) | leaves, tuber | EA, HB, D, EN, | measles, chicken pox, fetus strengthener, intestinal cleanse | NC |
| Maprounea membranacea Pax & K.Hoffm. | baobao (Fr) | leaves | D | walk early | 1348 |
| Mela azedarach L. | kadunga (Ob) | leaves | T | malaria | 1169 |
| Millettia gagnepainiana Dunn | fe-enziec (F) | liana | HB | umbilical cord | NC |
| Millettia mannii Baker | diperie (M), vinekwey (F) | bark, liana | D, A | intestinal cleanse, meconium removal, newborn | NC |
| Mimosa cf. diploricha Sauvalle | ebata (B) | leaves | V | respiratory problems | 1196 |
| Momordica cf. foetida Schumach. | eyenzum (F) | whole plant | EN | CBD ebem | NC |
| Momordica charantia L. | mabubulu (M), mabunbula (P) | leaves | D, EN, HB | colic, diarrhea, intestinal cleanse, crisis, measles, intestinal cleanse | NC |
| Morinda lucida Benth. | akong (F) | bark | D, EN, T, HB | intestinal cleanse, CBD la rate, malaria | 858, 1213, 1214 |
| Musa sp. | banna (B), angine/atoran/elat-onton-ekon/enbok-onon (F), banane (Fr), makokodo (Os) | leaves, fruit, root | EN, M, D, E, A, HB, SB, T, E, A | convulsions, CBD fesse rouge, CBD la rate, cough, umbilical cord, fetus strengthener, meconium removal, malaria, diarrhea, post-circumcision, fontanelles, vermiculate | NC |
| Musanga cecropoides R.Br. ex Tedlie | enseng (F) | bark | EN | CBD ebem | NC |
| Myrianthus arbores PBeauv. | angokon/ekokom/enkolu-omieng (F) | bark, fruit, leaves | EA, DR, E, D, EN, EC | fontanelles, food, fetus strengthener, walk early, diarrhea, malaria | NC |
| Myrianthus serratus (Trécul) Benth. | afulum (F) | whole plant | HB | newborn health | 1251 |
| Neubouldia laevis (P.Beauv.) Seem. | l’izop (Fr), ovendo (Om), | bark, leaves | D, HB | cough, good luck | 1187 |
| Nicotiana tabacum L. | tabac (Fr) | leaves | EA, M, EN | CBD fesse rouge | NC |
| Nymphcea lotus L. | ootofo (F) | leaves | EN | respiratory problems | NC |
| Ocimium americanum L. | ocim (F) | whole plant, leaves | DR, EA | earache, walk early | NC |
| Ocimium gratissimum L. | massep (F), aduma duma (Ob) | whole plant, leaves | T, EA, D, EN, M, HB | cold, cough, fever, toothache, CBD fesse rouge, diarrhea, intestinal cleanse, umbilical cord | 1072, 1160, 1172 |
| Ocimium sp. | ndzip (F), ndiandzi (P) | leaves, whole plant | D, EN | cough, malaria, intestinal cleanse | NC |
| Botanical Name | Vernacular Name | Used part | Preparation | Use category | AMT # |
|----------------|----------------|-----------|-------------|--------------|-------|
| Oryza sativa L. | riz (Fr) | seed | E | diarrhea | NC |
| Palisota cf. sp. | injokou (B) | leaves | HB | growth stimulation | 1290 |
| Pando cler Pierre | afān (F) | bark | EN | intestinal cleanse | NC |
| Parinari excelsa Sabine | otcha (B) | bark | HB | CBD pogha | 1281 |
| Passiflora foetida L. | matuka makari (P) | leaves | D | newborn health, diarrhea | NC |
| Pennisetum cf. glaucum (L.) R.Br. | wunzuku (P) | leaves | | newborn health | NC |
| Pentaclethra cf. esveldeana De Wild. & T.Durand | tzi (F) | whole plant, bark | DR | colic, intestinal cleanse | NC |
| Pentaclethra macrophylla Benth. | ebeng/nzesé (F), mpandzi (M), ompie (T) | bark, wood, seeds | M, EN, D | CBD la rate, asthma, fetus strengthener | 834, 1077 |
| Perochasma laetificata Miers | tsigue (F) | leaves, stem | EN, A, D | diarrhea | 810, 832, 863 |
| Phaseolus vulgaris L. | haricot (F) | bark | | toothache | 1078 |
| Phyllanthus amarus Schumach. & Thonn. | kunguh (F) | whole plant | T | flu | 1053 |
| Phyllanthus sp. | kunguh (F) | whole plant | T | diarrhea | 1245 |
| Picralima nitida (Stapf) T.Durand & H.Durand | dumavendo (B), ansongomo (F), dirundu (M) | bark | D, EN | asthma, CBD la rate, malaria | NC |
| Piper umbellatum L. | abomanzan/obadzom (F), malemto (P), | leaves, whole plant | EA, EN, HB | hemorrhoids, post-circumcision, intestinal cleanse, growth stimulation, measles | 877, 1246 |
| Piptadeniastrom africanum (Hook.f.) Brenan | miso-misotum (F) | bark | EN | CBD la rate | 816a |
| Plagioistyles africana (Müll.Arg.) Prain | esula (F) | bark | HB | newborn health | NC |
| Portulaca oleracea L. | afosi (F), oyabi (Ob) | whole plant | SB, E | premature birth, sores | 1176 |
| Pseudospondias longifolia Engl. | ofoss (F) | fruit | | kids’ food | 1081 |
| Psidium guajava L. | guave (F) | leaves | D, T, SB | diarrhea | NC |
| Pycllaxx. palma (K.Schum.) Bridson | colera (F) | herb | EA | fontanels | NC |
| Pterocarpus soyauxii Taub. | motobo (B), ci/umbey (F), kaolin rouge (Fr), motomba/padouk (M) | wood, bark | SM, S, EA, HB, D, EN | post-circumcision, fontanels, measles, chicken pox, umbilical cord, fontanels, walk early, crisis, respiratory problems, diarrhea | NC |
| Pyconanthes angolensis (Welw.) Warb. | ecombo/muchoko (B), etong (F), otchockou (M) | bark, leaves | T, M, D, E, SiB, HB | respiratory problems, fontanels, excessive saliva, cough, CBD fesse rouge, CBD pogha | 1076, 1090, 1195, 1284 |
| Quassia africana (Baill.) Baill. | izien iral (M) | root | D | malaria | 895 |
| Rauvolfia mannii Stapf | obaton (F) | | E, D, T | malaria, CBD la rate | NC |
| Ricinodendron cf. heudelottii (Baill.) Heckel | essessa (F) | leaves | D | fetus strengthener | NC |
| Botanical Name | Vernacular Name* | Used part | Preparation* | Use category* | AMT # |
|---------------|------------------|-----------|--------------|---------------|-------|
| Saccharum officinarum L. | enkok (F), canne sucre (Fr) | whole plant, stem | D, T, E | asthma, flu, malaria, meconium removal | NC |
| Sacoglottis gabonensis (Baill.) Urb. | ozohgo (B) | bark | EA | CBD la rate | NC |
| Sarcocephalus latifolius (Sm.) E.A.Bruce | ebohwey (Os), ondolo (T) | root, bark | D | malaria, anti-sorcery | 1404 |
| Scleria boivinii (B) | historic | historic | historic | historic | historic |
| Scoparia dulcis L. | mnserè (F), ogandarga (Om) | leaves, whole plant | D, TP | vermifuge, walk early | 830, 1165 |
| Scorodophloeus zenkeri Harms | kaakey (B) | bark | HB | CBD pogha, fetus strengthener | NC |
| Senna alata (L.) Roxb. | moviowo (B), dowlontou (F), kinkiliba (Fr), kagndiba (M), angare/oumara T | leaves | D, EA, EN, T | stomachache, blisters, diarrhea, CBD fesse rouge, malaria, constipation, meconium removal | 1210, 1320 |
| Sesamum radiatum Schumach. & Thonn. | mokoka (Os) | leaves | HB | fever | 1405 |
| Sida acuta Burm.f. | historic | historic | historic | historic | historic |
| Solanecio angustatus (Vahl) C.Jeffrey | budiambu | leaves | D | crisis | NC |
| Solanum americanum Mill. | ortchango (M) | leaves | D | cough, fetus strengthener, fever | 1323 |
| Spathodea cf. campanulata P.Beauv. | evuumb (F) | leaves | DR | cough | NC |
| Staudtia kamerunensis var. gabonensis (Warb.) Fouilloy | ogboby (C) | bark | D | Colt, meconium removal | 1256 |
| Streptogyna cf. crispata P.Beauv. | bongi (M) | whole plant | E | diarrhea | NC |
| Tabernanthe iboga Baill. | bois sacre (Fr) | root | D | fetus strengthener, anti-sorcery | NC |
| Telfairia cf. pedata (Sm. ex Sims) Hook. | ayuzum (F) | leaves | D | colic, meconium removal | NC |
| Terminalia catappa L. | huile d’almande (Fr) | seed | EA, M | fontanels, post-circumcision, measles, fever, CBD fesse rouge | NC |
| Tetrapleura sp. | nzili (F), ngoumou (Ob) | leaves, bark | D, EN | colic, constipation, meconium removal, vermifuge | 1171, 1202 |
| Tithonia diversifolia (Hemsl.) A.Gray | margarit (F) | leaves, whole plant, flower | EN, EA, HB, M | CBD la rate, intestinal cleanse, malaria, measles, CBD fesse rouge | 862 |
| unidentified (AMT 1087) | inziga kusu (F) | liana | D | lung cleanse | 1087 |
| unidentified (AMT 1243) | anyang (F) | whole plant | SB | premature birth | 1243 |
| Botanical Name                        | Vernacular Name | Used part | Preparation | Use category                  | AMT #                  |
|--------------------------------------|-----------------|-----------|-------------|-------------------------------|------------------------|
| Vernonia amygdalina Delile            | bikambil/jolyolo/zomalyo (F), kongobulubu/ondole (Ob), kungubulu (T) | leaves, bark | EN, D, HB, EC | intestinal cleanse, toothache, vermifuge, CBD la rate, measles, malaria, chicken pox | 807, 980, 1070, 1153, 1174 |
| Vernonia conferta Benth.              | abanga/abankak (F) | bark | T, D | diarrhea | 1071, 1201 |
| Vernonia sp.                          | mopotopoto (B) | whole plant | T, D | CBD la rate | 1257 |
| Vitellaria paradoxa C.F.Gaertn.       | berre de carite (Fr) | seed | M | CBD la rate | NC |
| Xylopia aethiopica (Dunal) A.Rich.    | bikwin (F) | fruit | S | post-circumcision | NC |
| Zanthoxylum cf. heitzii (Aubrév. & Pellegr.) P.G.Waterman | olom (F) | bark | D | asthma | NC |
| Zea mays L.                           | mais (Fr) | fruit | EA, HB | measles | NC |
| Zingiber officinale Roscoe            | gingembre (Fr), maketa (Om) | rhizome | D, EA, EN, V | cough, CBD fesse rouge, respiratory problems | NC |

a Local languages are abbreviated: (B)= Babungu; (C)= Commercial timber name; (F)= Fang; (Fr)= French; (M)= Mitsogo; (Ob)= Obamba; (Om)= Omiene; (Os)= Ossimba; (T)= Teke
b Preparations are abbreviated: (A)= attach; (C)= ceremony; (D)= drink; (DR)= drops; (E)= cat; (EA)= external application; (EC)= encircle; (EN)= enema; (HB)= herbal bath; (S)= spit; (SB)= steam bath; (SiB)= sit bath; (SM)= envelop in smoke; (T)= tea; (TP)= tap on feet; (M)= massage; (V)= vaccination
c Use category abbreviations are as follows: CBD= cultural bound disease
d Botanical voucher number and collector initials; NC= not collected.