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Medicinal plant use in the practice of midwifery in rural Honduras

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Abstract

Midwives in rural communities across the globe play an important role as primary health care providers, but few studies have documented the medicinal plants employed in this age-old practice. Semi-structured interviews were conducted with 23 midwives in seven rural communities near La Ceiba, Honduras, regarding the plants they employ during the birthing process as well as their associated beliefs. Seventy-nine different plant species used to treat 15 conditions occurring during the pregnancy, birth and postpartum stages were recorded. Most plants and uses were reported by only one or two midwives, reflecting the fact that most midwives in this region had immigrated from different parts of the country. Almost all the midwives used or knew of plant remedies for treatment of miscarriages, postpartum abdominal pain and hemorrhages, retained placenta, and for speeding up contractions during labor. The most frequently cited plants as well as those for which there was greatest consensus tended to be widespread cultivated or weedy species. Although use of medicinal plants by midwives has decreased as a result of retraining programs by government health centers, midwives' knowledge of medicinal plants may provide an important resource for improving maternal–infant health in Honduras and elsewhere. Suggestions for future ethnobotanical and ethnopharmacological studies on this topic are provided.
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Keywords: Honduras; Medicinal plants; Midwifery; Maternal–infant health; Traditional birth attendant (TBA) training programs; Women's knowledge

1. Introduction

Midwifery is the age-old practice of delivering children. It involves the administration of health care throughout the entire birth process, from pregnancy through conception to postpartum and care of the mother and newborn baby. Historically, midwives have played an essential role in the provision of health care to women and children and continue to do so in many rural areas today (Jordan, 1989; Phillips, 1990; Ojeda, 1992; Szmoisz and Vartebedian, 1992).

In recent years, there has been growing recognition of the traditional knowledge held by midwives (Pederson and Baruffati, 1985; Akerele et al., 1991), and an increasing number of studies on traditional midwifery beliefs and practices (Kay, 1982; MacCormack, 1982; Lozonczy, 1990; Viisainen, 1991; Nicolaidis, 1993, Liulan et al., 2003). Much of this interest has emerged within the context of widespread national and international retraining programs for midwives, also known as traditional birth attendant (TBA) training programs (WHO, 1979, 1992). These programs and associated policies, initiated in the 1950s and continued today, aim to improve the quality of maternal–infant health and have, therefore, prohibited many traditional midwifery practices that biomedical care providers consider harmful. For the same reasons, TBA retraining programs have also provoked a flood of criticism and debate (Jordan, 1989; Castro et al., 1991; Parra, 1993; Jenkins, 2002).

One of the practices often discouraged or prohibited in TBA training programs is the use of medicinal plants. Despite the fact that plants have played an important role in midwifery in many cultures, there are very few in-depth studies on the plants traditionally used by midwives (Browner, 1985; Bourdy and Walter, 1992; Ososki et al., 2002). Given the wealth of ethnobotanical literature on medicinal plants, and the importance of midwifery to the health of women and chil-

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dren, the small amount of in-depth information on women's knowledge of plants used for maternal–infant health is particularly surprising and needs to be addressed.

this study, we document the use of medicinal plants as well as some of the associated beliefs of 23 midwives in rural, *ladino* (non-indigenous) communities on the north coast of Honduras. Specifically, we investigate this issue within the context of a TBA retraining program and in recently colonized communities consisting of migrants from diverse areas of the country. While we feel strongly that ethnobotanical research needs to move beyond producing simple species lists, we present this basic study as a response to the paucity of information on this topic and with the hope that it may stimulate further ethnobotanical and ethnopharmacological research in this area.

2. Methodology

2.1. Study site

We conducted semi-structured interviews with 23 midwives in seven communities near La Ceiba, Atlantida on the north coast of Honduras (Fig. 1). The communities of Yaruca (population 1550 at time of study), Toncontín (population 900 at time of study), Río Viejo, Urraco, La Colorada, and La Lucha are located in the Río Congregal river basin, 22 km south-east of La Ceiba at an elevation of 200 m. The community of La Masica is situated 40 km west of La Ceiba, 100 m above sea level. The first five communities are located inside the buffer zone of Honduras' fifth largest protected area, Pico Bonito National Park, which comprises an area of 1125 km^2 of the Nombre de Dios mountain range.

There are health clinics located in La Masica and in Yaruca, the latter serving all the communities in the Rio Congregal basin. These centers are staffed by nurses. The centers provide modern training and equipment to midwives, and all but one of the midwives interviewed had undergone training and certification since approximately 1985. There is a hospital in La Ceiba that can be reached in about one hour from La Masica, Yaruca, and Rio Viejo, and in about two to three hours from Toncontin, Urraco, La Colorada and La Lucha.

Ecologically, this area is characterized as humid tropical rainforest, receiving an average of 2600–3000 mm of precipitation annually. However, much of the forest around the communities has been converted to agricultural land and cattle pasture. La Masica, surrounded by orange and pineapple plantations, lacks ready access to primary forest, but intact

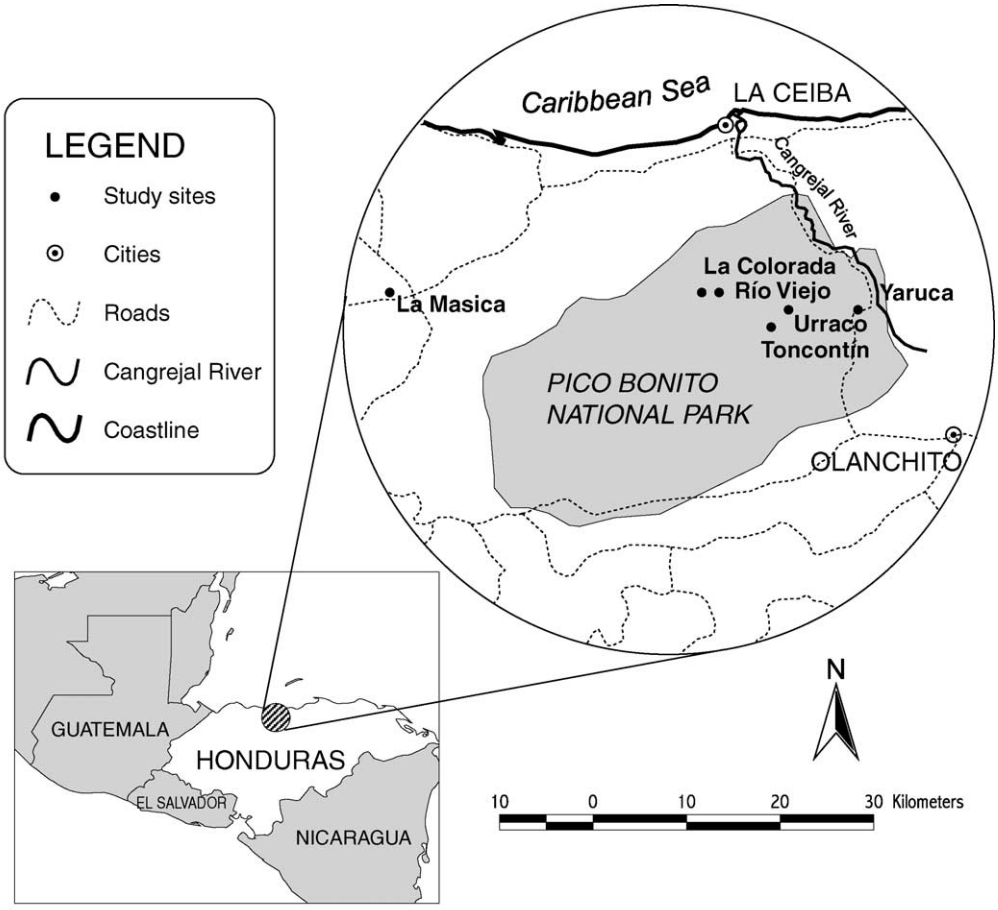

Fig. 1. Locational map of the study sites. Note that coordinates were not obtained for La Lucha.

forest does still remain nearby the other six communities, despite the rapid progression of deforestation in recent years.

2.2. Methods

All 23 midwives were interviewed in early February 1995 and revisited in April and December of the same year. Interviews were semi-structured and took place in the midwives' homes. The midwives were asked to identify the complications involved in childbirth, from pregnancy to postpartum stages, and were then interviewed about the medicinal plants they used, or had once used, to deal with them. In addition, the beliefs associated with the causes of the complications were also discussed. Only 12 of the 23 midwives were interviewed about conception, contraception, abortion and problems with the newborn, due to the sensitivity of discussing these issues. Therefore, the number of reporters appears low for these situations. For each plant reported, the preparation and doses were recorded. Plant specimens were collected with the midwives and vouchers were identified and deposited at the Universidad Nacional Autónoma de Honduras Herbarium (index herbarium code TEFH), in Tegucigalpa (see Appendix A).

3. Results

Twelve different problems associated with the birthing process including postpartum and newborn care were identified by the midwives. These problems were: morning sickness or *nauseas*; swelling of legs and ankles during the pregnancy; muscular pain and abdominal pain during the pregnancy; threatened miscarriage; speeding up of contractions during labor; *nervios* (literally 'nerves') during labor; retained placenta; postpartum hemorrhage and postpartum abdominal pain; lactation; eye discharge of the newborn infant; and *pujo* (see below). In addition, when asked, the midwives discussed plants for three other situations: contraception, induction of abortion and conception.

To treat these conditions, the midwives reported a total of 79 plant species from 40 families used in 125 different plant preparations. Twenty-five preparations were based on multiple species, while 12 of the 79 species were only reported as used in combination with other plants. A complete list of the plant names and families, uses, preparations, doses, number of midwives reporting each use and herbarium voucher numbers are listed in Appendix A. Some of these plants are also highlighted in the text and tables that follow.

3.1. Plants used during pregnancy

The most serious problem the midwives faced while caring for pregnant women was miscarriage. We recorded 13 different species used by the midwives for the prevention of miscarriages (Table 1). Most plants were reported by only one midwife, with the exception of coconut root, which was reported to be used by five. In the event of a threatened miscarriage, all the midwives said they massaged the womb area with their hands to lift the baby back into position. Some did this alone, but most also used plant medicine. Several of the midwives also said they held the woman by the ankles and gently shook her upside down to prevent the baby from falling. According to most of the midwives, miscarriages could be caused by anemia, falls, blows or weakness, although others told us that it could occur if one did

Table 1
Plants used during the pregnancy

Species[a]	#Reports[b]	Species	#Reports
(a) To prevent miscarriage		(c) To alleviate swelling of legs and ankles	
Cocos nucifera	5	*Bursera simaruba*	1
Jatropha curcas	4	*Cinnamomum verum*[c]	1
Byrsonima crassifolia	2	*Mikania micrantha*[c]	1
Cedrela odorata	1	(d) To alleviate abdominal pain	
Gossypium barbadense	1	*Cinnamomum verum*	1
Matricaria courrantiana	1	*Ocimum campechianum*	1
Ocimum campechianum	1	*Pimenta dioica*	1
Pavonia rosea[c]	1	*Pluchea carolinensis*[c]	1
Pluchea carolinensis	1	*Sechium edule*	1
Pseudelephantopus spicatus	1		
Psidium guajava	1		
Salix chilensis[c]	1		
Simarouba glauca	1		
(b) To alleviate morning sickness			
Matricaria courrantiana	2		
Asclepias curassavica	1		
Cinnamomum verum[c]	1		
Citrus aurantifolia	1		
Citrus aurantium	1		

[a] For multiple species preparations, refers to the first-named species.
[b] Number of midwives who reported this use.
[c] The species in at least one preparation is combined with other plants.

not satisfy a craving or if the baby was unwanted by the husband.

Although morning sickness or *nauseas* was reported to be a fairly common problem, the great majority of the midwives said they referred women suffering from morning sickness to the health centers. Only a few of the midwives said they used plant remedies reported for this condition (Table 1). In the case of swellings of the legs and ankles during pregnancy, only one midwife said she still used her plant remedy while all the rest now referred their patients to the health center. However, several plants were reported to have been previously used (Table 1). Finally, five plants were reported to be used for treating abdominal pain during pregnancy (Table 1).

All of the plants reported to be used for morning sickness, swelling of legs and ankles during pregnancy, and abdominal pain during pregnancy were either cultivated or abundant weedy species.

3.2. Plants used during the birth

By far, the most frequently mentioned plant medicine was the root of the lime tree (*Citrus aurantifolia*). This was reported to be used by over half of the midwives for speeding up contractions once the mother went into labor (Table 2). Fifteen additional species were also reported to be useful to speed up contractions. Most midwives said that they administer one-half cup decoction of one of these plants once their patient goes into labor. Although most women were reported to give birth lying down, the midwives said they encouraged women to assume whatever position was most comfortable for them.

One of the most serious complications midwives have to deal with during the birth is a retained placenta, which results from the failure to expel the placenta after the birth. Most of the midwives said the cause of this was too much heat during the pregnancy, whether it be from the hot sun or from not drinking enough cool drinks. Another common explanation was too much sleep or lying on one's back. A total of 14 different plant species were recorded to be useful for this situation (Table 2) and all were reported to be used in combination with physical techniques. The most common of these methods were having the mother squeeze salt in her palms, having her blow into a bottle, massaging her belly, or tying the husband's belt above the belly. Other techniques included inducing the mother to cough by dangling a hair or chicken feather down her throat or feeding the mother eggs.

The midwives reported *nervios* during the birth to be a fairly uncommon occurrence and only a few midwives had plant remedies for this (Table 2).

3.3. Plants used for post-partum problems

We recorded 11 different species that were used to stop postpartum hemorrhage (Table 3). Some midwives no longer treated their patients with plants in these situations, but instead transported them to the hospital. Others continued to rely on plants, but also tied a belt around the mother's upper thighs to stop the bleeding.

Postpartum abdominal pain was said to result from coagulated blood left over in the uterus. We recorded 11 different species used for this problem (Table 3), many of which were used continuously throughout the postpartum period. Several midwives reported plant remedies they had once used as

Table 2
Plants used during the birth

Species[a]	#Reports[b]	Species	#Reports
(a) Accelerate contractions during labor		(b) To expel the retained placenta	
Citrus aurantifolia[c]	12	*Cecropia peltata*	5
Cedrela odorata	3	*Matricaria courrantiana*[c]	3
Coix lacryma-jobi[c]	2	*Citrus aurantifolia*[c]	2
Matricaria courrantiana	2	*Pseudelephantopus spicatus*	2
Pseudelephantopus spicatus[c]	2	*Aristolochia grandiflora*	1
Yucca guatemalensis	2	*Cedrela odorata*	1
Citrus aurantium	1	*Citrus aurantium*	1
Chlorophytum elatum	1	*Coix lacryma-jobi*	1
Gomphrena globosa	1	*Heliconia* spp.[c]	1
Myroxylon balsamum	1	*Hyptis verticillata*	1
Ocimum campechianum	1	*Pavonia rosea*	1
Quassia amara	1	*Persea americana*[c]	1
Rosmarinus officinalis	1	*Rosmarinus officinalis*	1
Senna occidentalis	1	*Vernonia patens*	1
Stevia serrata	1	(c) To treat *nervios* during labor	
Zingiber officinale	1	*Senna occidentalis*	2
		Vetiveria zizanioides	2
		Cinnamomum verum	1
		Citrus aurantium	1

[a] For multiple species preparations, refers to the first-named species.
[b] Number of midwives who reported this use.
[c] The species in at least one preparation is combined with other plants.

Table 3
Plants used for postpartum problems and to treat newborns

Species[a]	#Reports[b]	Species	#Reports
(a) To stop postpartum hemorrahaging		(c) Purgative to cleanse womb after birth	
Citrus aurantium	3	*Guazuma ulmifolia*	1
Mangifera indica	3	*Liquidambar styraciflua*	1
Byrsonima crassifolia	2	*Matricaria courrantiana*	1
Cedrela odorata	2	*Senna alata*	1
Asclepias curassavica	1	*Senna* spp.	1
Celosia argentea	1	(d) To encourage lactation	
Cocos nucifera	1	*Zea mays*	3
Jatropha curcas	1	*Bursera simaruba*	2
Persea americana	1	*Pimpinella anisum*	2
Psidium guajava	1	*Theobroma cacao*	2
Simarouba glauca	1	*Cinnamomum verum*	1
(b) To alleviate postpartum abdominal pain		*Cymbopogon citratus*	1
Rosmarinus officinalis[c]	7	*Sambucus mexicana*	1
Matricaria courrantiana[c]	5	*Syzygium aromaticum*	1
Persea americana	3	(e) To treat eye discharge in newborns	
Bursera simaruba	2	*Bixa orellana*	1
Casimiroa edulis	2	*Rosa chinensis*	1
Jatropha curcas[c]	2	(f) To treat *pujo de mala vista*	
Ocimum campechianum	2	*Capsicum annuum*[c]	4
Cecropia peltata	1	*Ruta chalepensis*[c]	4
Citrus aurantium	1	*Buddleja americana*	1
Lippia graveolens	1	*Nicotiana tabacum*	1
Liquidambar styraciflua	1	*Rosmarinus officinalis*	1
Scoparia dulcis	1	*Vernonia patens*	1

[a] For multiple species preparations, refers to the first-named species.
[b] Number of midwives who reported this use.
[c] The species in at least one preparation is combined with other plants.

purgatives to cleanse the uterus (Table 3). For two of these species, *Liquidambar styraciflua* L. and *Matricaria courrantiana* D.C., the remedies included *las tres aceites*, a mixture of cooking oil, almond oil, and castor oil, in their preparation. All the midwives said that they no longer use purgatives since their use is prohibited by the local health centers.

The midwives reported that few women had problems with lactation and most did not have plant remedies for this. None of the midwives reported knowing exactly why problems with lactation occurred, although some suggested that it could be a result of not drinking enough during the pregnancy. Pulling the nipple throughout the pregnancy and after the birth was reported to help ensure a good supply of milk, though most midwives said that drinking anything could help bring the milk down and all those who administered decoctions to help promote the flow of milk (Table 3) used an accompanying massage as well.

3.4. Plants used for newborns

The midwives identified two common problems associated with newborn infants. One was eye discharge, or infants "born with their eyes shut together". The midwives attributed this condition to the mother's water (amniotic fluid) falling into the infant's eyes during birth. Only two midwives mentioned plant remedies for this condition, which involved aqueous solutions of the leaves of *Bixa orellana* L. or of the flower of *Rosa chinensis* Jacq. (Table 3). About one-third of the midwives said they used the eye drops provided by the health centers. Half of the midwives said that the best cure for this was to make their own eye drop solution by putting a piece of the baby's umbilical cord in boiling water, and applying a few drops of this solution to the baby's eyes.

The other problem reported to frequently plague newborns was *pujo*, a condition characterized by a baby who turns red, squeezes its fists and grunts and cries continuously. The midwives all said they treated this problem and described three different types of *pujo*. One called *culucos* was said to be due to an infestation of microscopic worms in the baby's arms, legs, back, neck and cheeks. The cure for this was to rub the mother's breast milk into the affected areas of the baby's skin, in a circular motion. The second type of *pujo* was known as *pujo de orine* and occurred as a result of a baby being left in wet diapers. The cure was to heat up the wet diaper.

Pujo de mala vista, the third class of *pujo* occurs when a person looks too strongly or too intensely at the newborn baby. The midwives explained that it need not be a negative look, but simply a look that was too intense. The remedies used for *pujo de mala vista* (Table 3) included those plant species that are most commonly used for spiritual ailments such as rue, chili pepper and garlic. All plant cures involved passing the baby over the steam of the decoction in the form

Table 4
Plants used for fertility, contraception and abortion

Species[a]	#Reports[b]	Species	#Reports
(a) To encourage conception		(c) To provoke abortion	
Smilax spinosa[c]	4	*Citrus aurantifolia*	5
Asclepias curassavica[c]	1	*Cedrela odorata*	1
Hyptis verticillata[c]	1	*Eupatorium glaberrimum*	1
Senna occidentalis[c]	1	*Hyptis verticillata*	1
(b) To prevent conception		*Momordica charantia*[c]	1
Persea americana	4	"Pate" (non-identified)	1
Jatropha curcas	3	"Masitero"(non-identified)	1
Momordica charantia	2	*Quassia amara*	1
Coutarea hexandra	1	*Scoparia dulcis*	1
Musa acuminata	1		
Nuerolaena lobata	1		
Senna alata	1		

[a] For multiple species preparations, refers to the first-named species.
[b] Number of midwives who reported this use.
[c] The species in at least one preparation is combined with other plants.

of a cross, or washing the baby with the decoction itself. Some midwives said the decoction should then be left under the bed of the baby as well.

Some of the midwives said that *pujo de mala vista* could be cured by having the person responsible for the strong look hold the baby in his or her lap, or by wrapping the baby in the sweaty shirt of the responsible person. The baby could also be cured by having a *primeriza* (a woman pregnant with her first child) do either of the above, or by having her bite a piece of sugarcane or cinnamon and then putting that in the baby's mouth.

3.5. Contraceptives, abortifacients and fertility problems

Only 12 of the 23 midwives were interviewed about plants used for contraception, abortion and fertility problems. Most midwives attributed the inability to conceive to a problem with the uterus: it being weak, cold or incorrectly positioned, or to sterility on the part of the man or the woman. Many also said it was often associated with previous use of birth control pills. Most midwives said they did not use plants for fertility problems. However, several reported plants that could be used to increase fertility (Table 4), including four of the twelve midwives who said that the roots of *Smilax spinosa* were effective for this purpose.

Although many midwives knew of several plants that could act as contraceptives (Table 4), all but one of the twelve midwives we interviewed insisted that they had never used or recommended them. Instead they commented that pills, diaphragms, condoms and sterilizations were all available at low cost at the health centers. As might be expected in Catholic communities, the midwives were even more reluctant to talk about any plant remedies they might know to provoke abortion. Only two midwives commented that they had recipes specifically for abortion and all reported that they had never performed abortions themselves. All of them, however, commented that bitter plants were dangerous to consume and many knew of, and coincided on, specific plants that should be avoided because they could provoke an abortion if consumed.

Table 5
Plants for which there was greatest consensus in use by midwives

Species	Use	Number of midwives citing species for this specific use	Management and distribution
Citrus aurantifolia	Acceleration of contractions	12	Cultivated; pantropical
Rosmarinus officinalis	Pain	10	Cultivated; worldwide
Cecropia peltata	Expulsion of placenta	5[a]	Secondary forests; tropical Mesoamerica and South America
Matricaria courrantiana	Postpartum pain	5[a]	Cultivated; worldwide
Cocos nucifera	Prevention of miscarriage	5[a]	Cultivated; pantropical
Citrus aurantifolia	Abortion	5[a]	Cultivated; pantropical
Smilax spinosa	Conception	4[a]	Secondary forests; Mexico to Colombia
Jatropha curcas	Prevention of pregnancy	4[a]	Cultivated; pantropical
Persea americana	Prevention of pregnancy	4[a]	Cultivated; pantropical
Ruta chalepensis	*Pujo de mala vista*	4	Cultivated; worldwide
Capsicum annuum	*Pujo de mala vista*	4	Cultivated; worldwide

[a] Based on interviews with only 12 midwives.

Table 6
Plants reported to have the greatest number of different uses

Species	Number of different conditions for which use was reported	Management and distribution
Citrus aurantium	6	Cultivated; pantropical
Matricaria courrantiana	6	Cultivated; worldwide
Cedrela odorata	5	Wild (old growth forest) and cultivated; tropical Mesoamerica and South America (and cultivated elsewhere)
Cinnamomum verum	5	Market; pantropical
Persea americana	5	Cultivated; pantropical
Citrus aurantifolia	4	Cultivated: pantropical
Jatropha curcas	4	Cultivated; pantropical
Ocimum campechianum	4	Wild and cultivated; tropical America
Rosmarinus officinalis	4	Cultivated; worldwide
Senna alata	4	Cultivated; pantropical

3.6. Overall trends in plant use by midwives

Overall consensus on plant uses among the midwives was low. A total of 10 of the 79 reported species were reported by four or more midwives for specific uses (Table 5). These species are all widely distributed across Central America. Eight of them are commonly cultivated food plants and the other two grow abundantly in secondary forests.

Over one-third (26) of all species recorded were reported to be used for more than one purpose. Ten of these species were reported to be used for four or more conditions or complications (Table 6). All of them are cultivated across Central America and most of are cultivated pantropically. These species include several of the plants that had the highest level of consensus among midwives for specific uses.

Overall, 45% of all the plants reported by the midwives were grown in home gardens, 14% bought in local markets and 37% were collected in the wild. However, of the wild collected plants, about 75% were abundant weedy or early successional species, that grow along roadsides, riverbanks or in secondary forest. The rest were collected from old growth forest.

4. Discussion and conclusions

The 23 Honduran midwives we interviewed use, or once used, a large number of medicinal plants in conjunction with other practices, in order to treat a variety of physical and spiritual ailments associated with maternal–infant health. Almost all of the midwives used plants as part of the treatment for the most common, major problems they faced. These were threatened miscarriages, the need to accelerate contractions during labor, retained placentas and postpartum abdominal pain and postpartum hemorrhages.

The large number of species we report here (79 species) is a consequence of the fact that many plants were only reported by one or two midwives. This is most likely a reflection of the composition of the communities in which we worked, since many residents were recent immigrants from other parts of the country, primarily Copan, Olancho, Santa Barbara and Lempira. Thus, many of the midwives brought with them the plant knowledge and even the plants from the regions from whence they came. The low consensus on plants used to treat the various problems may also reflect the decreasing use and knowledge of medicinal plants in general. That is, it is possible that there may have been higher levels of consensus before.

It is also important to note that commonly cultivated food plants make up the great majority of those species that showed the greatest consensus of use. The few that are not cultivated are widespread secondary forest or roadside species. Therefore, it is likely that the midwives knew and used these species before immigrating to their current communities. This may explain the higher consensus obtained for their use.

Almost all of the most frequently cited species (for any use), the species with the greatest number of uses, as well as the majority of all species reported, are also common, cultivated or early successional species. This suggests that the midwives are using what is most easily available to them, and coincides with other studies which have reported heavy reliance on homegardens, ruderal and anthropogenic habitats as sources of medicinal plants in general (Kohn, 1992; Voeks, 1996; Frei et al., 2000; Stepp and Moerman, 2001).

4.1. Consistency with uses elsewhere

The fact that most of the plants reported by the midwives are widespread and abundant cultivated food plants or weedy species suggests that these plants may be used similarly by midwives elsewhere. However, due to the paucity of information on plants used by midwives, this is currently difficult to verify for most species in our study. Still, the uses of a few of the plants most frequently cited by the Honduran midwives are consistent with studies elsewhere. For instance, in our study, the highest level of consensus was found for the use of *Citrus aurantifolia* (lime tree) roots, which was reported by more than half of the midwives to accelerate contractions. The roots of *Citrus aurantifolia* are also used by tribal people in Arunachal Pradesh, India to facilitate labor (Bhuyan, 1994). Reports by the Honduran midwives that this plant is used to provoke abortion also coincide with its use in India (Bhuyan, 1994). Likewise, among the Kenyah Leppo' Ke of Indonesia, citrus species in general are recognized to have antifertility or abortifacient effects (Gollin, 2001).

The second-most consistently cited plant in this study was chamomile (*Matricaria courrantiana*). However, unlike *Cit-*

rus aurantifolia, chamomile was reported to treat a wide-range of ailments and high levels of consensus were not found for any use besides postpartum abdominal pain (for which it was reported to be used with *Tagetes lucida*). Given the widespread use in Honduras (House et al., 1995) of both *Matricaria courrantiana* and *Tagetes lucida* for all kinds of stomach ailments, this is not unexpected. In addition, two Honduran midwives also reported that *Matricaria courrantiana* could be used to speed up contractions, and this has also been reported by midwives in Oaxaca, Mexico (Browner, 1985).

Rosemary (*Rosmarinus officinalis*) is also widely used to reduce pain in Honduras (House et al., 1995) and is reported to relieve menstrual pain among the Garifuna of Guatemala (Giron et al., 1991). This lends support to its use by seven of the midwives to alleviate postpartum pain (sometimes in conjunction with *Tagetes lucida* and *Matricaria courrantiana*).

Another species that was commonly cited by the Honduran midwives was the orange tree (*Citrus aurantium*). One midwife said that she used it to treat *nervios* during the birth, which is consistent with the findings of Paul and Cox (1995), who report that *Citrus aurantium* has been used as a sedative in at least nine other places, including Curacao, Guatemala, India, Mexico, Puerto Rico, Spain, United States and Vietnam and several countries in North Africa. Two midwives also reported that it was useful to relieve morning sickness, which may be consistent with its use to relieve vomiting in India (Paul and Cox, 1995).

Finally, the avocado (*Persea americana*), one of the most frequently cited plant species in this study, was used to stop postpartum hemorrhages and prevent conception among other things. *Persea americana* is reportedly used for both of the above problems in Oaxaca, Mexico (Browner, 1985) and as a contraceptive in the Dominican Republic (Ososki et al., 2002). Three Honduran midwives in this study also reported that the bark of mango trees is used for postpartum hemorrhages, as is the case in the Dominican Republic (Ososki et al., 2002).

4.2. Impacts of retraining program and deforestation on medicinal plant use

All of the midwives told us that their predecessors (mothers and grandmothers) had vastly greater plant pharmacopeias and that there were many conditions for which they had once employed the medicinal plants reported, but no longer do so. This is due, in large part, to Honduras's Rural Penetration Program, which was established in 1974 to set up rural medical clinics across the country. These centers are staffed by nurses and provide training for village level health volunteers and promoters. Since 1985, the health centers in La Masica and Yaruca have formally trained the midwives through a series of certification courses, refreshment workshops and monthly meetings. The trained midwives also receive some antiseptic equipment. It appears that certification has been beneficial to the midwives, not only by providing them with education, but also by giving them a new and important legitimacy within the community.

However, even though all of the midwives we interviewed had been practicing midwifery for many years before they were retrained in the TBA program, the training in these health centers has focused solely on modern western medicine. The nurses we spoke with at the health centers maintained that they do not actually prohibit the use of plant medicine, but almost all of the midwives interviewed said they felt that they were no longer permitted to use it. In addition, in the event of complications at any stage of the birth process, midwives are now required to transport the patient to a health center or hospital. Thus, many midwives no longer treat problems such as postpartum hemorrhages or swelling of the legs and ankles during the pregnancy. While some midwives were very grateful for this, others felt frustrated that their experience in treating these conditions was not recognized.

Compounding the effect of government health centers on the decline in use of medicinal plants is the rapid destruction of the surrounding rainforest. Midwives who were born in the Rio Congregal basin reported that their mothers and grandmothers frequently went out into the rainforest to collect medicinal plants, and that when they were younger they did as well. Now, because the forest immediately surrounding the communities has been clear-cut for agriculture and cattle-raising, they rarely venture out to where there is forest. This may be reflected in the very small percentage of plants they use from the primary forest. In addition, medicinal plants that are also economically valuable have been extracted from the nearby forest and are now scarce. For example, one midwife reported that she used to use the bark of *Cedrela odorata* to treat hemorrhages and miscarriages, but can no longer do so because there are almost none of these trees left in the area. Therefore, although the majority of medicinal plants used by midwives in the past were likely cultivated and weedy species, the proportion of those gathered from primary forests appears to have decreased.

4.3. Conclusions and future research needs

Although the women we interviewed had a wealth of information on plant medicines used to promote maternal–infant health, much of the plant knowledge held by midwives has been largely ignored to date. This may be due, at least in part, to the fact that in many communities midwives' knowledge is not highly respected. Therefore, when ethnobotanists enter communities and seek to interact with people knowledgeable of medicinal plants, these women, and the common, cultivated plants they employ, are often overlooked.

However, if some of the plant medicines used by midwives are effective, especially those cultivated or abundant secondary forest species that are widely accessible, they may serve as important and necessary tools for promoting maternal–infant health. This is especially true in the context of rural health centers that are poorly equipped and poorly

funded, such as those in Yaruca and La Masica. Indeed, in spite of the health centers' position on medicinal plants at the time of this study, midwives continued to employ some of their plant remedies. If international health organizations and government ministries heed the calls to incorporate the traditional knowledge of midwives into modern health care programs, special emphasis needs to be placed on the role of medicinal plants. This will necessitate further ethnobotanical and ethnopharmacological research on the medicinal plants used in the practice of midwifery in Honduras and elsewhere. Testing and evaluation of medicinal plant-use, and assessments of how plant-use interacts with other components of the treatments used by midwives will be particularly important. This includes assessment and elimination of medicinal plants or practices that may be harmful.

The research we present here is descriptive, and we offer it in response to the lack of in-depth literature on medicinal plant use by midwives. However, it is essential that future ethnobotanical research in this area move beyond lists, and towards investigating the larger questions relating to the dynamic relationships between the practice of midwifery and medicinal plants. For instance, how and why do midwives identify and select plants for particular purposes? How do plant-use practices change and evolve, including the types and combinations of plants used, as midwives move into new and different ecological environments? Have the retraining programs resulted in different kinds of polypharmacy? What are the health and ecological implications of these changes? The great migrations of rural poor into new areas of forest and into cities over the past few decades make the latter questions particularly relevant. Despite the antiquity of the practice of midwifery, much remains to be learned about the relationships between use and knowledge of medicinal plants by midwives and maternal–infant health.

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Appendix A

Plants reported by the 23 Honduran midwives with botanical and use information. Plants are arranged in alphabetical order by species name. Interested readers should contact the authors to obtain an electronic version of this table.

Species	Family	Common name	Voucher#[a]	Plant source[b]	Total #times cited[c]	Use[d]	#Reports[e]	Plant part used	Preparations and doses reported[f]
Allium sativum L.	Liliaceae	Ajo	S. Dalle 66	c	2	Combination only	–	–	–
Aristolochia grandiflora Sw.	Aristolochiaceae	Guaco	S. Dalle 54	w	1	Retained placenta	1	Root	Up to three cups of decoction drunk
Asclepias curassavica L.	Apocynaceae	Viborán	S. Dalle 43	w	3	Morning sickness	1	Root	Decoction drunk
						Conception	1	Root	Decoction prepared with *Matricaria courrantiana* D.C.
						Hemorrhage	1	Root	Three cups of decoction drunk per day
Attalea cohune Mart.	Arecaceae	Manaca	Not collected	c, w	2	Combination only	–	–	–
Bixa orellana L.	Bixaceae	Achiote	S. Dalle 4	w	2	Eye discharge	1	Cogollo	Mixed with water and applied in drops to baby's eyes
Buddleja americana L.	Buddlejaceae	Hoja blanca	S. Dalle 29	c	1	Pujo	1	Cogollo	A woman pregnant with her first child chews the leaf which is given to the baby with the mother's milk
Bursera simaruba (L.) Sarg.	Burseraceae	Indio desnudo	S. Dalle 28	w	5	Postp ab pain	2	Bark	Decoction drunk
						Lactation	2	Bark	Decoction drunk
						Swelling	1	Bark	Decoction drunk with meals
Byrsonima crassifolia H.B.K.	Malpighiaceae	Nanche	S. Dalle 31	c	5	Miscarriage	2	Bark	One to two cups of decoction is drunk with massage of womb
						Hemorrhage	2	Bark	One to three cups of decoction drunk per day
Capsicum annuum L.	Solanaceae	Chile chilpete	S. Dalle 16	c	4	Pujo	4	Fruit or leaf	Baby is passed over vapour of decoction in the form of a cross. These decoctions can be made of the following: fruit; fruit prepared with *Rosmarinus officinalis* L., *Salvia lavenduloides* H.B.K. and a braid of *Allium sativum* L.; decoction prepared with root of *Ruta chalepensis* L., the hair of *Zea mays* L., a fresh egg, camphor, agua florida and oil; decoction prepared with branches placed in the form of a cross in an old pot and a braid and head of *Allium sativum* L., *Cuminum cyminum* L., and a piece of *Attalea cohune* Mart. from each corner of the roof of the house, after the baby is passed over the vapor the pot is placed under the baby's bed
Casimiroa edulis Llave & Lex.	Rutaceae	Matasano	S. Dalle 51	c	2	Postp ab pain	2	Bark	Decoction drunk
Cecropia peltata L.	Moraceae	Guarumo	S. Dalle 19	w	7	Retained placenta	5	Cogollo	One cup of decoction drunk
						Postp ab pain	1	Cogollo	Decoction drunk
Cedrela odorata L.	Meliaceae	Cedro real	S. Dalle 52	w	8	Contractions	3	Bark	One cup of decoction drunk; decoction prepared, esencia coronada and agua florida added, and drunk
						Hemorrhage	2	Bark	Three cups of decoction drunk per day
						Retained placenta	1	Bark	One cup of decoction drunk
						Miscarriage	1	Bark	One cup of decoction drunk with massage of the womb
						Abortion	1	Bark	Decoction taken

Celosia argentea L.	Amaranthaceae	Moño	S. Dalle 32	c	1	Hemorrhage	1	Flower	Three cups of decoction drunk per day
Cinnamomum verum Presl.	Lauraceae	Canela	S. Dalle 65	m	6	Ab pain preg	1	Bark	Decoction taken
						Morning sickness	1	Bark	Decoction prepared with *Matricaria courrantiana* D.C.
						Swelling	1	Bark	Ground with *Pimenta dioica* Merr., *Cuminum cyminum* L. and lard, and then applied to the legs and ankles once a day, before sleeping
						Lactation	1	Bark	Decoction taken
						Nervios	1	Bark	Decoction taken
Citrus aurantifolia (Christm.) Swingle	Rutaceae	Limón	S. Dalle 23	c	22	Contractions	12	Root	One to two cups of decoction drunk; decoction prepared with root of *Cucurbita moschata* Duch.Ex Poir. and one cup drunk; decoction prepared with cogollo of *Yucca guatemalensis* Baker and cogollo of *Cecropia peltata* L. and two cups drunk
						Abortion	5	Root	Decoction taken
						Retained placenta	2	Root	Decoction prepared with *Maticaria courrantiana* D.C. and shavings of toucan's beak and one cup drunk
						Morning sickness	1	Fruit	Fresh juice drunk several times per day
Citrus aurantium L.	Rutaceae	Naranjo agrio	S. Dalle 8	c	8	Hemorrhage	3	Leaf	Decoction prepared with esencia coronada and two to three cups drunk per day
						Contractions	1	Bark	Three to four cups of decoction drunk
						Morning sickness	1	Fruit	Fresh juice drunk several times per day
						Postp ab pain	1	Leaf or bark	Decoction drunk
						Retained placenta	1	Cogollo	One cup of decoction drunk
						Nervios	1	Bark	One to two cups of decoction drunk twice during the birth
Cocos nucifera L.	Arecaceae	Coco	Not collected	c	7	Miscarriage	5	Root or fruit	Decoction prepared from young ground fruits and one cup drunk with a massage; one cup of root decoction drunk
						Hemorrhage	1	Root	Decoction taken
Coix lacryma-jobi L.	Poaceae	Lágrima de san pedro	S. Dalle 45	w	4	Contractions	2	Seed	One cup of decoction drunk; decoction prepared with leaf of *Attalea cohune* Mart. from each corner of the house, and one cup drunk
						Retained placenta	1	Seed	One cup of decoction drunk
Coutarea hexandra (Jacq.) Schumann	Rubiaceae	Quina	S. Dalle 67	m	1	Prevent conception	1	Bark	Decoction drunk for 6 days during menstruation
Cucurbita moschata Duch. ex Poir.	Cucurbitaceae	Ayote	Not collected	c	1	Combination only	–	–	–
Cuminum cyminum L.	Apiaceae	Comino	S. Dalle 74	m	2	Combination only	–	–	–
Cymbopogon citratus (D.C.) Strapf	Poaceae	Zacate de limón	S. Dalle 17	c	1	Lactation	1	Leaf	Decoction taken
Chlorophytum elatum R.Br.	Liliaceae	Malamadre	S. Dalle 34	c	1	Contractions	1	Leaf	One cup of decoction drunk
Eupatorium glaberrimum D.C.	Asteraceae	Venadillo	P. House 545	w	1	Abortion	1	Leaf and root	Decoction taken
Fevillea cordifolia (L.)	Cucurbitaceae	Chichimora	S. Dalle 44	m	1	Combination only	–	–	–
Gomphrena globosa L.	Amaranthaceae	Siempre viva	S. Dalle 25	c	2	Contractions	1	Flower	One cup of decoction drunk

Appendix A (*Continued*)

Species	Family	Common name	Voucher#[a]	Plant source[b]	Total #times cited[c]	Use[d]	#Reports[e]	Plant part used	Preparations and doses reported[f]
Gossypium barbadense L.	Malvaceae	Algodón	P. House 374	c	2	Miscarriage	1	Leaf	One cup of decoction drunk
Guazuma ulmifolia Lam.	Sterculiaceae	Cablote	S. Dalle 13	w	1	Purgative	1	Bark	Shredded in cold water
Heliconia sp.	Musaceae	Bijao	S. Dalle 56	w	1	Retained placenta	1	Root	Decoction prepared with seeds of *Coix lacryma-jobi* L.
Hyptis verticillata Jacq.	Lamiaceae	Barrehorno	S. Dalle 29	w	3	Conception	1	Cogollo	Decoction prepared with *Matricaria courrantiana* D.C.
						Retained placenta	1	Leaf	Leaves shredded and drunk crude with water
						Abortion	1	Leaf	Decoction taken
Jatropha curcas L.	Euphorbiaceae	Piñón	S. Dalle 20	c	10	Miscarriage	4	Bark, cogollo, or exudate	One to two cups of shoot decoction with a piedra lumber is drunk; one to three cups of bark decoction drunk; one cup of raw exudate mixed with water is drunk
						Prevent conception	3	Bark	Three cups of decoction per day drunk during menstruation
						Postp ab pain	2	Bark	Three cups of decoction drunk per day; decoction prepared with shoot of *Gossypium barbadense* L. and three cups drunk per day
						Hemorrhage	1	Bark and cogollo	Three cups of decoction drunk per day
Linum usitatissimum L.	Linaceae	Linaza	S. Dalle 73	c	1	Combination only	–	–	–
Lippia graveolens H.B.K.	Verbenaceae	Orégano	S. Dalle 48	c	3	Postp ab pain	1	Leaf	Three cups of decoction drunk per day during 1 week
Liquidambar styraciflua L.	Hamamelidaceae	Liquidambo	S. Dalle 61	w	2	Postp ab pain	1	Bark	Three cups of decoction drunk per day
						Purgative	1	Bark	Decoction prepared with honey, cooking oil, caster oil and almond oil and drunk the third day after the birth
Mangifera indica L.	Anacardiaceae	Mango	S. Dalle 9a	c	4	Hemorrhage	3	Bark	Decoction drunk
Matricaria courrantiana D.C.	Asteraceae	Manzanilla	S. Dalle 57	c, m	23	Postp ab pain	5	Whole plant	Decoction drunk or used as vaginal douche; decoction prepared with *Tagetes lucida* Cav. and drunk with meals and massage for a maximum of 8 days; decoction prepared with *Tagetes lucida* Cav. and *Pimpinella anisum* L. and drunk with meals
						Retained placenta	3	Whole plant	Decoction prepared with esencia coronada and one cup drunk; decoction prepared with *Rosmarinus officinalis* L. and *Salvia lavenduliodes* H.B.K. and one cup drunk; decoction prepared with castor oil and applied in vaginal douche
						Contractions	2	Whole plant	One cup of decoction drunk
						Morning sickness	2	Whole plant	Decoction drunk several times a day
						Lactation	1	Whole plant	Decoction taken
						Miscarriage	1	Whole plant	One cup of decoction with esencia coronada drunk with a massage of the womb
						Purgative	1	Whole plant	One cup drunk of decoction combined with almond oil, castor oil and cooking oil
Mikania micrantha H.B.K.	Asteraceae	Tabardillo	S. Dalle 14	w	$1\frac{1}{2}$	Swelling	1	Leaf	Decoction of the cogollo of *Bixa orellana* L. applied to the legs in a bath and 11/2 cups drunk per day

Mimosa albida Humb & Bompl ex Willd	Fabaceae	Zarse de cabro	S. Dalle 49	w	1	Combination only	–	–	–
Momordica charantia L.	Cucurbitaceae	Calaica	S. Dalle 24	c, w	3	Prevent conception	2	Leaf	Decoction drunk three times per day during menstruation
						Abortion	1	Leaf	Decoction prepared with root of *Citrus aurantifolia* (Christm.) Swingle and *Lippia graveolens* H.B.K. and one cup drunk
Musa acuminata Colla.	Musaceae	Plátano	Not collected	c	1	Prevent conception	1	Root	Decoction drunk during menstruation
Myristica fragrans Hoult	Myristicaceae	Nuez moscada	S. Dalle 68	m	1	Combination only	–	–	–
Myroxylon balsamum (L.) Harms.	Fabaceae	Balsamo	S. Dalle 64	m	1	Contractions	1	Seed	One cup of decoction drunk
Nicotiana tabacum L.	Solanaceae	Tabaco	Not collected	c	1	Pujo	1	Leaf	Cigarette smoke passed over baby
non-identified		Masitero	Not collected	w	1	Abortion	1	Root	Decoction taken
non-identified	Dioscoreaceae	Pate	S. Dalle 60	m	1	Abortion	1	Leaf	Drunken crude (in water)
Nuerolaena lobata (L.) R. Br.	Asteraceae	Tres puntas	S. Dalle 21	c, w	1	Prevent conception	1	Leaf	Decoction drunk for 6 days during menstruation
Ocimum campechianum Miller	Lamiaceae	Albahaca del monte	S. Dalle 10	c, w	5	Postp ab pain	2	Root	Three cups of decoction drunk per day
						Contractions	1	Root, shoot	One cup of decoction is drunk
						Ab pain preg	1	Root	Decoction prepared
						Miscarriage	1	Root	One cup of decoction drunk
Pavonia rosea Schect.	Malvaceae	Mozote	S. Dalle 40	w	2	Retained placenta	1	Leaf	Shredded leaves placed in a cup of cold water and drunk
						Miscarriage	1	Root	Decoction prepared with roots of *Mimosa albida* Humb & Bompl ex Willd and two cups drunk
Persea americana Miller	Lauraceae	Aguacate	S. Dalle 3	c	9	Prevent conception	4	Bark or seed	Decoction of seed drunk during menstruation; decoction of bark is prepared with bark of *Byrsonima crassifolia* H.B.K., *Tagetes lucida* Cav. and one tablet of camphor, and one cup drunk every day
						Postp ab pain	3	Bark or seed	Three cups of decoction drunk per day
						Retained placenta	1	Bark	Decoction prepared with bark of *Mangifera indica* L. and root of *Citrus aurantifolia* (Christm.) Swingle and one cup drunk
						Hemorrhage	1	Bark	Three cups of warm decoction drunk per day
Pimenta dioica (L.) Merr.	Myrtaceae	Pimienta gorda	S. Dalle 70	c, m	4	Ab pain preg	1	Seed	Decoction drunk
Pimpinella anisum L.	Apiaceae	Anis	S. Dalle 75	m	3	Lactation	2	Seed	Decoction drunk with juice
Pluchea carolinensis G. Don.	Asteraceae	Siguapate	S. Dalle 22	w	2	Ab pain preg	1	Leaf	Decoction with *Matricaria courrantiana* D.C. and *Tagetes lucida* Cav. prepared
						Miscarriage	1	Cogollo	Two cups of decoction drunk with a massage of the womb
Pseudelephantopus spicatus CF. Baker.	Asteraceae	San antonio	S. Dalle 36	w	5	Contractions	2	Root	One cup of decoction drunk; decoction prepared with root of *Citrus aurantifolia* (Christm.) Swingle and one cup drunk
						Retained placenta	2	Root	One cup of decoction drunk
						Miscarriage	1	Root	One cup of decoction drunk

Appendix A (*Continued*)

Species	Family	Common name	Voucher#[a]	Plant source[b]	Total #times cited[c]	Use[d]	#Reports[e]	Plant part used	Preparations and doses reported[f]
Psidium guajava L.	Myrtaceae	Guayabo	S. Dalle 6	c	2	Miscarriage	1	Bark	One cup of decoction drunk with massage of womb
						Hemorrhage	1	Bark	Three cups of decoction drunk per day
Quassia amara L.	Simaroubaceae	Hombre grande	S. Dalle 62	m	2	Contractions	1	Bark	One cup of decoction drunk
						Abortion	1	Bark	Decoction taken
Rosa chinensis Jacq.	Rosaceae	Rosa de castilla	S. Dalle 15	c	1	Eye discharge	1	Flower	Mixed with water and applied in drops to baby's eyes
Rosmarinus officinalis L.	Lamiaceae	Romero	S. Dalle 76	c, m	13	Postp ab pain	7	Whole plant	Decoction used as vaginal douche once per week; decoction prepared with *Matricaria courrantiana* D.C. and *Tagetes lucida* Cav.; decoction prepared with *Salvia lavenduloides* H.B.K. and drunk three times per day with a massage
						Contractions	1	Leaf	Decoction prepared with *Salvia lavenduloides* H.B.K. and one cup drunk
						Retained placenta	1	Whole plant	Warm decoction used as vaginal douche
						Pujo	1	Whole plant	Decoction prepared with branches from each corner of the house and baby is passed over the vapor in form of a cross
Ruta chalepensis L.	Rutaceae	Ruda	S. Dalle 5	c	5	Pujo	4	Root	Prepared with egg and water, used to wash the baby, then placed below the baby's bed; baby is washed with decoction prepared with *Pimenta dioica* (L.) Merr. and agua florida; baby is washed with ground root mixed with water
Salix chilensis Molina.	Salicaceae	Sauce	S. Dalle 12	c	1	Miscarriage	1	Cogollo	Decoction of shoot and young *Cocos nucifera* L. prepared and three cups drunk
Salvia lavenduliodes H.B.K.	Lamiaceae	Salvia	S. Dalle 77	c, m	3	Combination only	–	–	–
Sambucus mexicana Presl ex D.C.	Caprifoliaceae	Sauco	S. Dalle 11	c	1	Lactation	1	Leaf	Two leaves placed over the breast in the form of a cross and applied with menthol
Scoparia dulcis L.	Scrophulariaceae	Mastuerzo	S. Dalle 35	w	2	Postp ab pain	1	Root	Decoction taken
						Abortion	1	Root	Decoction taken
Sechium edule (Jacq.) Swartz	Cucurbitaceae	Pataste	S. Dalle 1	c	1	Ab pain preg	1	Fruit	Eaten with salt
Senna alata (L.) Roxb.	Fabaceae	Bruja	S. Dalle 50	w	2	Prevent conception	1	Root	Decoction prepared with *Myristica fragrans* Hoult, *Tagetes lucida* Cav., *Rosmarinus officinalis* L., *Linum usitatissimum* L., *Gomphrena globosa* L., almond oil, castor oil and cooking oil and drunk in very small doses during menstruation
						Purgative	1	Leaf and root	Decoction drunk
Senna occidentalis L. Link	Fabaceae	Frijolillo	S. Dalle 33	w	4	Nervios	2	Root or seed	Three to four cups of decoction of the root drunk; three to four cups of decoction of ground roasted seed drunk
						Contractions	1	Root	One cup of decoction drunk
						Conception	1	Root	Decoction prepared with *Matricaria courrantiana* D.C.

Senna sp.	Fabaceae	Sen	S. Dalle 69	w	1	Purgative	1	Leaf	Decoction drunk
Simarouba glauca DC.	Simaroubaceae	Negrito	S. Dalle 53	w	2	Miscarriage	1	Bark	One cup of decoction drunk with massage of womb
						Hemorrhage	1	Bark	Three cups of decoction drunk per day
Smilax regelii Killip and Morton	Smilacaceae	Zarzaparilla	S. Dalle 59	w	1	Combination only	–	–	–
Smilax spinosa Mill.	Smilacaceae	Cuculmeca	S. Dalle 63	w	4	Conception	4	Root	Decoction drunk throughout menstruation; decoction prepared with bark of *Virola koschnyi* Warb., root of *Smilax regelii* Killip and Morton, three drops of agua florida and one-fourth tablet of camphor prepared and one cup a day drunk after bathing, every day during menstruation; decoction prepared with *Lippia graveolens* H.B.K., *Fevillea cordifolia* (L.) and *Matricaria courrantiana* D.C.; decoction prepared with *Cinnamomun verum* Presl, *Syzygium aromaticum* (L.) Merr & Perry, and *Pimenta dioica* (L.) Merr. and drunk three times a day
Stevia serrata Cav.	Asteraceae	Flor de octubre	S. Dalle 72	w	1	Contractions	1	Flower	One cup of decoction drunk
Syzygium aromaticum (L.) Merr & Perry	Myrtaceae	Clavo de olor	S. Dalle 71	m	2	Lactation	1	Seed	Decoction drunk with meals and massage of nipples
Tagetes lucida Cav.	Asteraceae	Pericón	S. Dalle 58	c, m	6	Combination only	–	–	–
Theobroma cacao L.	Sterculiaceae	Cacao	S. Dalle 9	c	2	Lactation	2	Seed	Decoction taken
Vernonia patens H.B.K.	Asteraceae	Sucunan	S. Dalle 41	w	2	Retained placenta	1	Cogollo	One cup of decoction drunk
						Pujo	1	Leaf	Shoot chewed by a woman pregnant with her first child and then given to baby with breast milk
Vetiveria zizanioides Nash	Poaceae	Valeriana	S. Dalle 18	c	2	Nervios	2	Root	To treat nervios during labor, decoction drunk
Virola koschnyi Warb.	Myristicaceae	Sangriento	S. Dalle 55	w	1	Combination only	–	–	–
Yucca guatemalensis Baker	Agavaceae	Izote	S. Dalle 2	c	3	Contractions	2	Cogollo	One cup of decoction drunk
Zea mays L.	Poaceae	Maíz	Not collected	c	4	Lactation	3	Seed	Decoction from ground seed drunk cold
Zingiber officinale Roscoe	Zingiberaceae	Jengibre	S. Dalle 26	c	1	Contractions	1	Root	One to two cups of decoction drunk

[a] All vouchers were deposited at TEFH in Tegucigalpa, Honduras.

[b] Symbols for plant source are: c, cultivated; m, bought in a local market; w, collected from the wild.

[c] Total number of times mentioned in a plant remedy, as the principal plant or in combination with other plants.

[d] Uses have been abbreviated as follows: “Ab pain preg”—to alleviate abdominal pain during pregnancy; “Abortion”—to provoke abortion; “Combination only”—plants only mentioned to be used in combination with other species; “Conception”—to encourage conception; “Contractions”—to accelerate contractions during labor; “Eye discharge”—to treat eye discharge in newborns; “Hemorrhage”—to stop postpartum hemorrahages; “Lactation”—to encourage lactation; “Miscarriage”—to prevent a miscarriage; “Morning sickness”—to alleviate morning sickness; “Nervios”—to treat nervios during labor; “Postp ab pain”—to alleviate postpartum abdominal pain; “Pujo”—to treat pujo de mala vista; “Purgative”—a purgative to cleanse womb after birth; “Retained placenta”—to expel a retained placenta; “Swelling”—to alleviate swelling of the legs and ankles during pregnancy.

[e] The number of midwives who mentioned the given species as the first plant for a given remedy.

[f] Variations in the preparations and doses are separated by semicolons.

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