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Saamaka uwii: Saramaccan medical plant knowledge, practices and beliefs for local health care in Suriname

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Chapter 2

Patterns in medicinal plant knowledge and use in a Maroon village in Suriname

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'There are no useless plants, only uninformed people'
(Tooy Alexander, Saamaka healer, 2008)

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ABSTRACT

Ethnopharmacological relevance: Traditional medicine plays an important role in the primary health care practices of Maroons living in the interior of Suriname. Large numbers of medicinal plants are employed to maintain general health and cure illnesses. Little is known, however, on how knowledge of herbal medicine varies within the community and whether plant use remains important when modern health care becomes available.

Aim of the study: To document the diversity in medicinal plant knowledge and use in a remote Saramaccan Maroon community and to assess the importance of medicinal plants vis a vis locally available modern healthcare. We hypothesized that ailments which could be treated by the village health center would be less salient in herbal medicine reports.

Methods: During three months fieldwork in the Saramaccan village of Pikin Slee, ethnobotanical data were collected by means of participant observations, voucher collections and 27 semi-structured interviews and informal discussions with 20 respondents. To test whether knowledge of medicinal plant species was kept within families, we performed a Detrended Correspondence Analysis.

Results: In total, 110 medicinal plant species were recorded, with 302 health use reports and 72 uses, mostly related to general health concerns (42%), diseases of the digestive system (10%), musculoskeletal system and fever (each 7%). Bathing was the most important mode of application. Most health use reports related to cure (58%) and health promotion (39%), while disease prevention played a minor role. Traditional medicine not only treated cultural illnesses, but also health concerns that could be treated with locally available modern medicines. Knowledge of medicinal plant species is not strictly kept within families, but also shared with friends. Certain recipes and applications, however, may be specific family knowledge.

Conclusion: Medicinal plants play a very important role in the daily lives of the Pikin Slee villagers. Plant use reflects actual health concerns, but as modern medicines are available for most of these concerns, the use of herbal medicines seems to be a deep-rooted cultural preference, especially when concerned with cultural illnesses and health promotion. Locally provided healthcare could be enriched if traditional knowledge, illness concepts, and medicinal plant uses could fit into a larger, community-oriented framework.

Keywords: Suriname, Maroons, Saramaccan, traditional medicines, medicinal plants, traditional knowledge.

INTRODUCTION

As in other developing countries, medicinal plants are still regularly used in Suriname for primary health care and are therefore a highly valued resource. Since the 1980s, various studies have documented Afro-Surinamese medicinal plant knowledge (May, 1982; Sedoc, 1992; Heyde, 1995), but they often lacked (correct) scientific plant names, proper voucher collections, or Maroon plant uses. Maroons are descendants of escaped African enslaved who fought for their freedom and settled in the rainforest hinterland of Suriname. Within Maroon society, traditional knowledge is still handed over orally within families. Several ethnographic and anthropological studies have been done on Maroon cultures (e.g. Herskovits and Herskovits, 1934; Green, 1974; De Beet & Sterman, 1981; Thoden van Velzen and van Wetering, 1988; Price 1975a, 1976, 1983, 1990). Ethnobotanical research among Maroons started only recently and focused on medicinal plant harvesting and trade (Van Andel et al., 2007; Van Andel and Havinga, 2008), medicinal plant use (Odonne et al., 2007; Van Andel et al., 2012), ethnobotanical classification and use of different forest types (Hoffman, 2009), and plant use for cultural illnesses concerning baby care, vaginal hygiene, bitter tonics, leishmaniasis and spiritual well-being (Van Andel et al., 2007, 2008, 2012; Ruyschaert et al., 2009; Van Andel and Ruyschaert, 2011; Vossen et al., 2014; Ramdas, 2015). These studies, however, mostly dealt with Maroons living in or close to the capital Paramaribo. Ethnobotanical information is still scarce for Maroons living in the remote interior of the country. In the current paper we describe the diversity of medicinal plants and their cultural importance for health and well-being by Saramaccan Maroons living along the Upper Suriname River.

The Saramaccans (Saramaka or Saamaka) form the largest group of the six Maroon communities with a population of approximately 55,000 people (Price, 2011). Traditional livelihood activities of the Saramaccan are subsistence farming (shifting cultivation), hunting, fishing and gathering of wild forest products (Price, 2011). Maroons still derive the majority of their subsistence resources from the forest, but have access to imported products sold in their small village shops. After centuries of living in isolation in the Surinamese rainforest, their traditional livelihood is under severe threat. Although logging and mining have historically been part of the Surinamese economy, the current number of people involved, the amounts of gold, bauxite and wood extracted and their social and ecological impacts are unprecedented (Heemskerk and Oliveira, 2003; ACT, 2015) The large-scale exploitation of natural resources in the interior of Suriname has substantial negative effects on the forest cover, slowing down plant regeneration and leading to degraded ecosystems and loss of biodiversity (Peterson and Heemskerk, 2001; ACT, 2015; Rahm et al., 2015). Documenting Saramaccan traditional knowledge

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and their dependence on medicinal plants will therefore not only contribute to a better understanding of their rich culture and their strong relationship with the natural environment, but can also contribute to improve local health care and biocultural conservation.

We investigated which medicinal plants the Saramaccan used, for what purposes, and the explanatory reasons. We distinguished between plant uses for health promotion, disease prevention and cure, but also recorded which health concerns could be treated by the medical center in the village. Based on the earlier studies of Maroon ethnomedicine and a previous pilot study in the Saramaccan area (Van 't Klooster, 2009), we hypothesized that most plant species in Pikin Slee were used for health promotion and that traditional knowledge was still kept within families. Health concerns that could be successfully treated by the official health facilities were expected to be less salient in herbal medicine practices.

MATERIAL AND METHODS

Study area

The Upper Suriname River area (Sipaliwini district) is the center of Saramaccan Maroon territory (Terborg, 2001) and comprises about 62 villages upstream of the Van Blommenstein Lake (Fig.1). It is characterized as a very traditional area, where poverty, male migration, economic dependency of women and low access to educational facilities form a much larger problem than in other Maroon communities (Terborg et al., 2005).

The village of Pikin Slee (Pikiseei), situated along the Upper Suriname River and surrounded by forest, is one of the few Saramaccan villages that resisted against the establishment of a church. Therefore, traditional practices are still a vital part of daily life. The small health post in the village is provided by the Medische Zending (Medical Mission), a Protestant Christian foundation based on the urge to evangelize in word and deed (Medische Zending, 2014) and responsible for the majority of primary health care in the interior of Suriname. They have 12 medical posts in the Upper Suriname River area, with three major health centers in Laduani, Debike and Dyumu. The responsible doctor for all villages along the Upper Suriname River resides at Dyumu (Terborg, 2001), which is three hours by boat from Pikin Slee. The nurses are in charge of the medical post in the villages and take care of the patients. Major diseases encountered in the Saramaccan area are maternal health problems, diarrhea, respiratory ailments, malaria and diseases due to accidents and violence (Terborg, 2001).

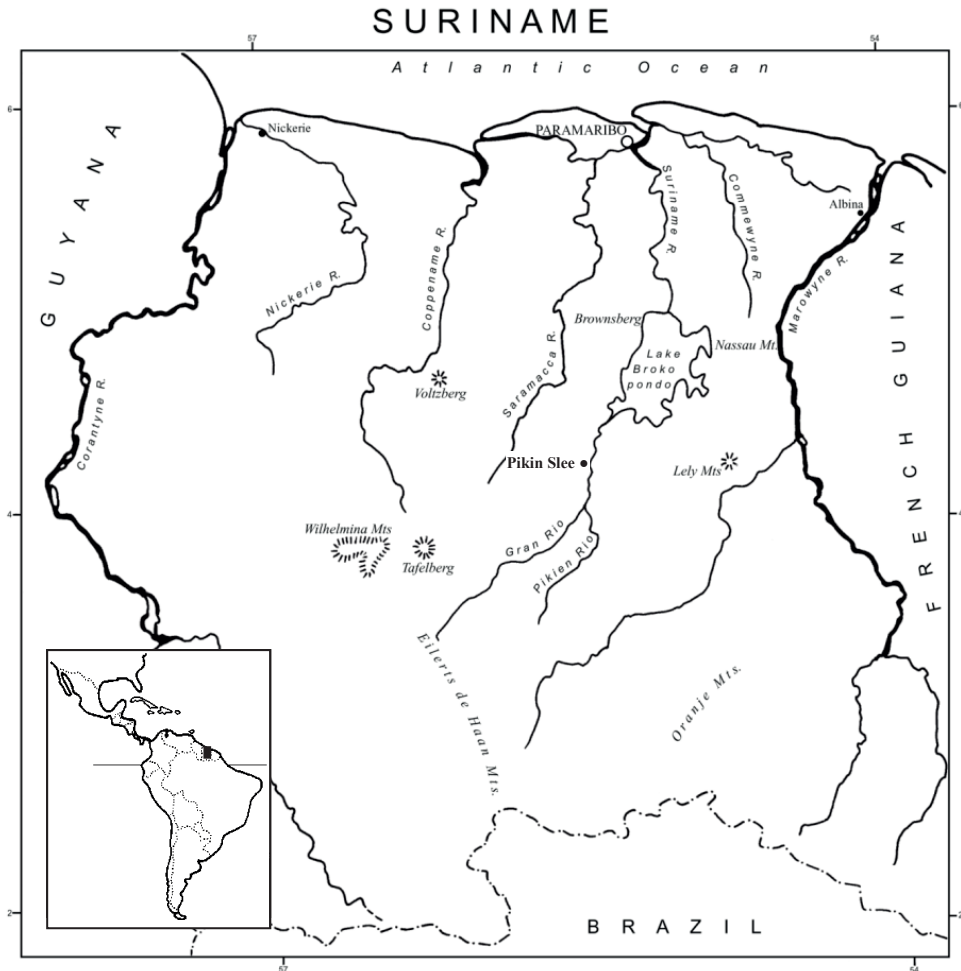


Figure 1 | Map of Suriname and research area. Drawing by H.R. Rypkema, Naturalis Biodiversity Center.

At the time of this research, ca. 2344 people were registered in Pikin Slee by the Medical Mission (Van 't Klooster, 2009). Population figures from the official registration office in Debike showed a much lower number (1152 inhabitants), but this large discrepancy may be explained by the constant flow of Saramaccans moving in and out of the area in search for paid labour in urban areas like Paramaribo or Cayenne (French Guyana). Strict gender-based labour divisions leave the women in charge of food production and childcare, which is considered as their main responsibility (Terborg et al., 2006). Only a small portion of Maroon women has access to the paid labour market due to large gender disparities in employment opportunities and a daily workload that makes it very difficult to be involved in full time income generating activities (Terborg et al., 2006). Especially young mothers

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depend on the economic support of men (Terborg et al., 2005). Illiteracy among women is higher than among men, which, in combination with isolation and poverty, hinders access to important information and knowledge sources (Terborg, 2001). About 74% of the population in the Sipaliwini District (Maroons and Indigenous) had only primary education or no formal education at all (ABS, 2014).

Data collection and analysis

In the period of March-June 2009, fieldwork was carried out in Pikin Slee, during which medicinal plant knowledge, practices and beliefs in relation to health care were studied. Information was gathered by means of semi-structured interviews and plant collection trips. A plant collection permit was obtained from the Suriname Forest Service (SBB) which included written prior informed consent from the village head of Pikin Slee, also the leader of the Foundation of Saramaccan Authorities. The nature and purpose of the research was explained to respondents before interviews took place.

Respondents knowledgeable on medicinal plants were identified through community contacts and snowball sampling and included males and females, traditional healers and laymen, old and younger people. Other methods used were participant observations, free listing, assignment techniques and informal (group) conversations (Martin, 1995). Semi-structured interviews permit collection of in-depth information and spontaneous remarks by respondents (Hardon et al., 2001). Topics included medicinal plant uses for health promotion, disease prevention and cure, local names, growth forms of plants, parts used, mode of preparation, route of administration, transfer of knowledge, biocultural conservation, cosmology, health concerns and biomedical health care. To provide a general picture of the type of health concerns treated, the biomedical oriented International Classification of Diseases (ICD) was used as a framework (WHO, 2015). The ICD is internationally used to monitor the incidence and prevalence of diseases and other health related problems and to provide a picture of the general health situation in a country or population. We added some extra categories to address health concerns or uses in the village that could not be captured by the ICD.

Interview questions were pre-tested in the Netherlands with a Pikin Slee native to check whether the questions were well posed, framed in correct Saramaccan and pertinent to the research. One health worker in training from the medical post, and two dentists in training were interviewed to gather general information on ailments and diseases being treated by the medical post in Pikin Slee. Interviews were conducted in Dutch or in the local Saramaccan language, recorded with a digital voice-recorder, transcribed in Saramaccan and discussed again with the respondents to verify answers and/or discussed with a Saramaccan key informant

living in the Netherlands afterwards. After completion of the research, the village head received a monetary contribution to improve the community's livelihood.

Our earlier experience with Saramaccan plant use (Van 't Klooster, 2003; Van Andel and Van 't Klooster, 2007), allowed us to identify many medicinal plants mentioned during interviews on the spot. Species that were not immediately familiar were collected as botanical vouchers and identified and deposited at the National Herbarium of Suriname (BBS). All scientific names were updated with The Plant List (www.theplantlist.org), accessed 24 July 2015. To assess similarities and differences in plant knowledge among respondents and verify whether plant knowledge was kept within families, a Detrended Component Analysis (DCA) was conducted from a matrix table, in which for each plant species was scored per respondent whether it was mentioned or not. Only plants identified on species level were included in the analysis. All analyses were performed in PC-ORD 5.0.

RESULTS

Socio demographic details of the respondents

In total 27 interviews with 20 key respondents (9 males, 11 females) took place, some lasting as long as two hours. All respondents were Saramaccan, except the health worker (Creole), the dentists (Dutch) and the head of the school (Indigenous). The 16 Saramaccan respondents belonged to different families, were between 16 and 82 years old, and were using medicinal plants on a daily base for themselves or their family. One of these respondents was formally employed as *basia*, assistant to the village head, while two respondents were practising traditional healers (Table 1). Most Saramaccan respondents had little formal education due to the lack of education facilities before 1980 and the civil war (1986-1992), which deprived the inhabitants of Pikin Sleen from primary education until 1996 when the school re-opened. Although the Full Evangelist church was active in the nearby village Futunaakaba (Terborg, 2001), only one respondent mentioned to attend the church there sometimes.

Diversity of plant species and their uses

A total of 302 medicinal and ritual uses were recorded for 110 plant species, belonging to 52 families and 92 genera. For each plant species, uses are presented together with the vernacular and scientific names, plant parts used, mode of preparation, route of administration, growth form, and habitat information in Table S1. The most prominent families were Leguminosae (13 species), Arecaceae (6 spp.), Solanaceae (6 spp.), followed by Anacardiaceae, Compositae and Euphorbiaceae (each 4 spp.). More than half of the plant species recorded were used for more than one health purpose (Fig. 2).

Table 1 | Socio-demographic characteristics of the respondents (n=16).

Characteristics	Frequency
Gender	
Male	8
Female	8
Education	
Primary education	3
No education	13
Religion	
Traditionalist	16
Christian	0
Ethnicity	
Saramaccan	16
Profession	
Traditional farming (shifting cultivation)	16
Assistant village head (<i>basia</i>)	1
Craft maker	4
Traditional healer	2
Employment (paid monthly)	
Employed	1
Unemployed (no monthly fixed salary)	15
Age	
20-30 years	2
31-40 years	6
41-50 years	6
51-60 years	0
61+ years	2

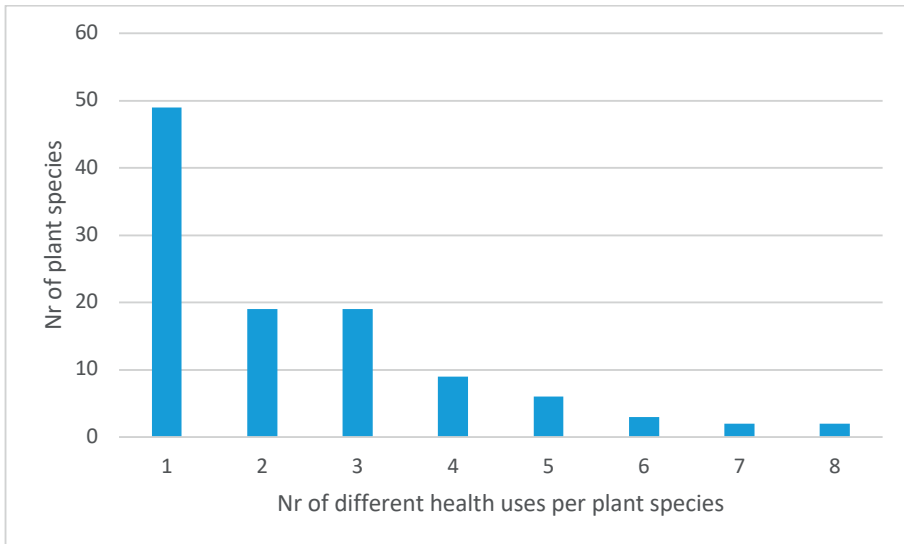


Figure 2 | Number of different health uses recorded per plant species.

Highest numbers of uses were recorded for the species *Campomanesia aromatica* and *Lantana camara* (8), *Banara guianensis* and *Siparuna guianensis* (7), *Unxia camphorata*, *Stachytarpheta cayennensis* and *Eryngium foetidum* (6), and for *Anacardium occidentale*, *Mangifera indica*, *Annona muricata*, *Cocos nucifera*, *Ocimum campechianum* and *Phoradendron perrottetii* (5). The multi-functional species *C. aromatica* was cited in relation to eight different health uses; to treat fever, for cleansing, refreshing and healing the vagina after delivery, enhance sexual pleasure, relieve menstruation pain, to give strength and ward off evil. The much-cited shrub *L. camara* was used to treat fever, leishmaniasis and body pain, and was further added to baths to refresh babies, to clean or heal the vagina after a delivery and give general strength to the new mother. Both species are aromatic and were often used in herbal baths for body refreshment and their agreeable smell. They could easily be collected in and around the village. Although shrubs (19%) and lianas (9%) provided important sources of medicine, the most prominent life forms used in herbal medicines were trees (39%) and herbs (33%). Medicinal parts of trees and lianas were collected while walking to agricultural fields that could be one to two hours distance from the village. Shrubs and herbs were mainly collected closer to the village, either from the wild or cultivated for regular use.

Plant parts used, preparation and administration

Among the different plant parts used, the leaves, solely or in mixtures with other plants, were most prominently used in the preparation of medicines. This was followed by the entire plant, often small herbs and plant parts like bark, seeds, fruits or roots (Fig. 3).

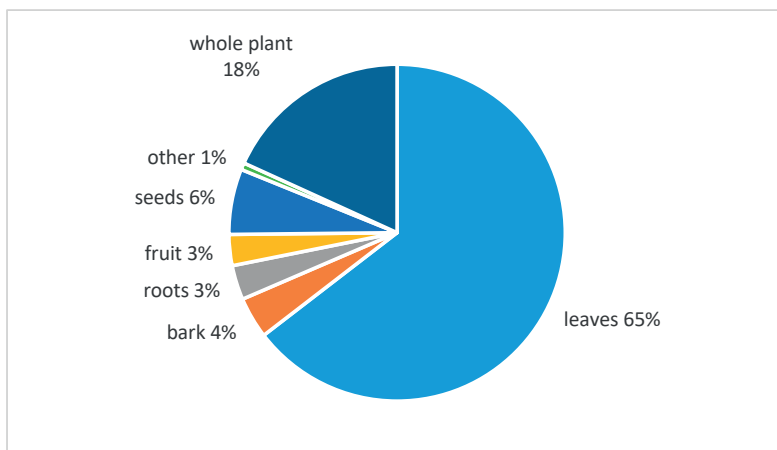


Figure 3 | Importance of different plant parts used in the preparation of the traditional medicines.

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Fruits were also eaten regularly for their medicinal properties, like *Attalea maripa*, *Oenocarpus bacaba*, *Astrocaryum vulgare*, *Bactris gasipaes*, *Carica papaya* and *Musa* sp., while the fruits of *Citrus aurantiifolia* and *C. limon* were squeezed to drink the juice. Most plant parts were used fresh, but people also dried and stored species in dry, dark places for later use, especially those that were harder to find in the forest. Most medicines were prepared and processed in the form of a decoction, for which plant parts were boiled in large amounts of water for bathing or drinking. Processing methods with much lower reports were infusions and others (Fig. 4).

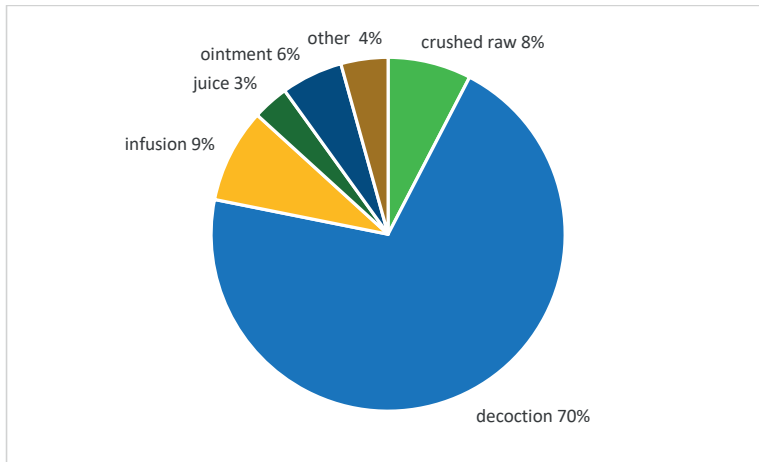


Figure 4 | Mode of processing of the traditional medicines.

Approximately three quarters of the herbal treatments were applied externally. Bathing with a decoction of medicinal plants, referred to here as herbal baths, formed the most dominant type of administration recorded (Fig. 5). Plants were also administered as a poultice, for which the plant parts were crushed or bruised, sometimes mixed with some water, and added in between two layers of cloths to be applied on the skin, or as a compress directly applied to the skin. Some plants were administered by rubbing in the plant parts, or by applying drops of plant juice directly in eyes or ears. Ointments were prepared by crushing fresh or dried plants parts with fat or oil. Although the most prominent form of administration was externally, medicinal plants were taken internally via drinking and eating. Drinking herbal infusions and decoctions formed, after bathing, the second most important form of administration recorded.

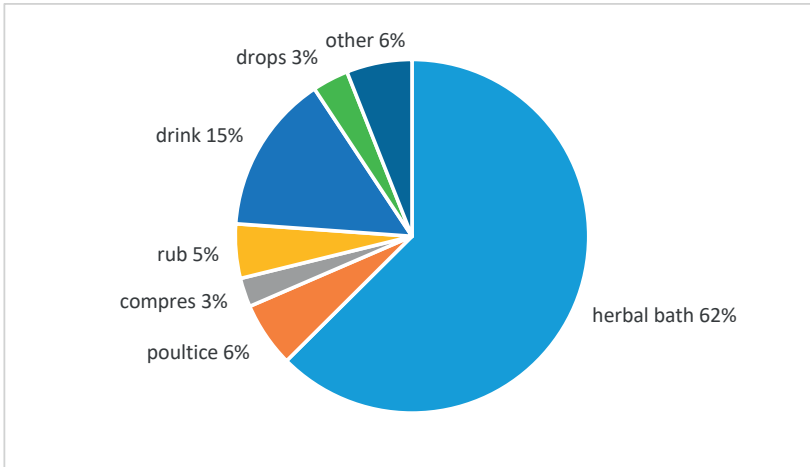


Figure 5 | Mode of administration of the traditional medicines.

Plant use categories

Plants were used for at least 72 different health purposes, which could be classified into broad disease categories following the International Classification of Diseases and related health problems (ICD). The health categories that did not fit in the ICD classification were categorized as ‘cultural illnesses’ or ‘general health’ (Table 2). Most plant use reports were collected for this category of general health (42%), followed by the ICD categories known as diseases of the digestive system (10%), musculoskeletal system (7%), general symptoms and signs (fever of unknown origin) (7%), respiratory system diseases (6%), skin and subcutaneous tissue diseases (5%), injury, poisoning and other consequences of external causes (5%) and cultural illnesses (5%). Most injuries recorded were accidental cuts or wounds, but body scarifications or tattoos for which cuts were made on purpose to beautify the body, part of Saramaccan tradition, were also included. Most herbal treatments related to cure (58%), followed by health promotion (39%) and disease prevention (3%).

Within the category of general health, a large variety of plant species was used, covering more than half (57%) of all plant species reported during the research. Most uses within this category related to strength (30%). This shows the cultural importance of the maintenance and improvement of strength for the Saramaccan. Most adults often conducted heavy physical labour, following gender-divided patterns of task division. While men were responsible for making boats and clearing forests to provide new agricultural fields for their wives, women planted and harvested the crops. Walking back to the village with crops, firewood and drinking water from the forest creeks is physically challenging. Therefore, herbal baths with

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taangasinkiiuwii (lit. ‘strong body herbs’) were used regularly as people believed that this would keep the body strong. Not taking these baths would make it difficult to continue with the hard but necessary work. Herbal baths for strength were also used for washing newborns, pregnant women or women who just had delivered. However, some respondents mentioned that these people were not bathed with *taangasinkiiuwii* but with herbal baths for strength to make the body or bones of the baby and mother strong, instead of for helping to conduct hard physical work. Therefore, these health uses were classified in two different categories in Table 2.

Transfer of medicinal plant knowledge

The results of the DCA analysis were plotted on the two main axes that caused the distribution of the data, to visualize potential overlap and variation in medicinal plant species knowledge by the respondents. Axes do not represent variables but serve to visualize variation and similarity in plant use. As presented in Fig. 6 there was substantial variation in plant knowledge among the 16 respondents.

The five families, indicated by symbols (Δ , \square , $-$, \circ , \blacklozenge), did not clearly cluster together, meaning they had no specific knowledge on species not shared with others, apart from informants 1 and 4. Respondents 14, 15, 16 were the sole representatives of their family. The position of these outliers suggests an even wider variety of knowledge, but more data from their and other families is not available. More than half (54%) of the species were only mentioned by one person, illustrating the unequal distribution of plant knowledge within the community. Only *Campomanesia aromatica* was mentioned by eight respondents from three different families. There was also a large variation in the number of species (from 2 to 29) mentioned per respondent.

Table 2 | Local health uses classified in categories of biomedical diseases and health problems (WHO, 2015) and added categories.

ICD classification of diseases and added categories	Health uses	Health promotion, disease prevention or cure	Nr of records per health use	Nr of records per disease category (%)	Species used to treat this health concern
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	anemia	cure	2	2 (1)	<i>Xanthosoma sagittifolium</i> , <i>Cestrum latifolium</i>
Diseases of the circulatory system	high blood pressure	cure	7	7 (2)	<i>Mangifera indica</i> , <i>Spondias dulcis</i> , <i>Annona muricata</i> , <i>Terminalia catappa</i> , <i>Peperomia pellucida</i> , <i>Scoparia dulcis</i> , <i>Eleusine indica</i>
Diseases of the digestive system	toothache	cure	2	29 (10)	<i>Jatropha curcas</i> , <i>Allium sativum</i>
	constipation	cure	5		<i>Asrocaryum vulgare</i> , <i>Bacaris gaspares</i> , <i>Oenocarpus bacaba</i> , <i>Jatropha curcas</i> , <i>Musa</i> sp.
	diarrhea	cure	3		<i>Grissopernum sericeum</i> , <i>Unxia camphorata</i> , <i>Macrolobium</i> sp.
	stomachache	cure	17		<i>Aristolochia</i> cf. <i>consimilis</i> , <i>Unxia camphorata</i> , <i>Hymenaea courbaril</i> , <i>Macrolobium</i> sp., <i>Parkia pendula</i> , <i>Banana guianensis</i> , <i>Matayba</i> cf. <i>arborescens</i> , <i>Quassia amara</i>
	worms (internal)	cure	1		<i>Carica papaya</i>
	hemorrhoids	cure	1		<i>Psidium guajana</i>
Diseases of the ear and mastoid process	ear ache	cure	1	1 (0)	<i>Gospium barbadense</i>
Diseases of the eye and adnexa	eye infection	cure	5	5 (2)	<i>Eclipta prostrata</i> , <i>Sphagneticola trilobata</i> , <i>Maprounea guianensis</i> , <i>Peperomia pellucida</i>
Diseases of the genitourinary system	itching vagina and uterus	cure	1	5 (2)	<i>Unxia camphorata</i>
	menstruation pain	cure	4		<i>Cyperus laxus</i> , <i>Campomanesia aromatica</i> , <i>Pityrogramma calomelanos</i> , <i>Stachyarrhiza cayennensis</i>
Diseases of the musculoskeletal system and connective tissue	back ache	cure	2	22 (7)	<i>Phoradendron perrottetii</i> , <i>Cocos nucifera</i>
	bone fracture	cure	12		<i>Anacardium occidentale</i> , <i>Mangifera indica</i> , <i>Spondias mombin</i> , <i>Annona muricata</i> , <i>Xylopia discreta</i> , <i>Asrocaryum sciophilum</i> , <i>Cocos nucifera</i> , <i>Carapa</i> cf. <i>guianensis</i> , <i>Casaria</i> cf. <i>arbores</i> , <i>Phoradendron perrottetii</i> , cf. <i>Phoradendron</i> sp., <i>Bauhinia guianensis</i>
	pain in foot/hand	cure	1		<i>Stachyarrhiza cayennensis</i> , <i>Bryophyllum pinnatum</i>
	localized pain	cure	2		<i>Stigmaphyllon sinuatum</i> , <i>Aciotis purpurascens</i> , <i>Nicotiana tabacum</i> , <i>Lantana camara</i>
	body pain	cure	4		
	swelling foot	cure	1		<i>Bryophyllum pinnatum</i>
Diseases of the nervous system	dizziness	cure	1	3 (1)	<i>Annona muricata</i>
	headache	cure	2		<i>Hypis mutabilis</i> , <i>Ocimum campechianum</i>
Diseases of the respiratory system	cold	cure	4	17 (6)	<i>Tabernaemontana undulata</i> , <i>Hypis lanceolata</i> , <i>Cymbopogon citratus</i>
	cough	cure	12		<i>Anacardium occidentale</i> , <i>Eryngium foetidum</i> , <i>Tabernaemontana undulata</i> , <i>Rolandra fruticosa</i> , <i>Hypis lanceolata</i> , <i>Cymbopogon citratus</i> , <i>Citrus aurantiifolia</i> , <i>Citrus limon</i> , <i>Laportea aestuans</i>

ICD classification of diseases and added categories	Health uses	Health promotion, disease prevention or cure	Nr of records per health use	Nr of records per disease category (%)	Species used to treat this health concern
Diseases of the skin and subcutaneous tissue	vocal cord	cure	1	16 (5)	<i>Eryngium foetidum</i>
	boils	cure	1		<i>Actiois purpurascens</i>
	itching skin	cure	3		<i>Sphagnetocola trilobata</i> , <i>Unxia camphorata</i> , <i>Momordica charantia</i>
	pimples on skin adult	cure	2		<i>Banara guianensis</i> , <i>Solanum</i> sp.
	pimples on skin baby	cure	2		<i>Stachyarrhapheta cayennensis</i> , <i>Unxia camphorata</i>
	pimples on skin child	cure	3		<i>Amaranthus</i> sp., <i>Jatropha curcas</i> , <i>Lueboopsis</i> cf. <i>rosea</i>
	worms in skin swelling by mosquito bites	cure	2		<i>Atrocarpus altilis</i> , <i>Euphorbia hirta</i>
	leishmaniasis	cure	3		<i>Quassia amara</i>
	Certain infectious and parasitic diseases	cure	3	3 (1)	<i>Quassia amara</i> , <i>Lantana camara</i>
	General symptoms and signs, not elsewhere classified	Fever (unknown origin)	cure	19	22 (7)
Injury, poisoning and certain other consequences of external causes	fever (baby) (unknown origin)	cure	3		<i>Maprounea guianensis</i> , <i>Banara guianensis</i> , <i>Siparuna guianensis</i>
	bleeding tooth socket (post-extraction)	cure	2	16 (5)	<i>Anacardium occidentale</i> , <i>Peperomia pellucida</i>
	wounds/cuts	cure	12		<i>Anacardium occidentale</i> , <i>Mangifera indica</i> , <i>Spondias mombin</i> , <i>Annona muricata</i> , <i>Xylopia discreta</i> , <i>Asrocaryum sciophilum</i> , <i>Cocos nucifera</i> , <i>Canapa</i> cf. <i>guianensis</i> , <i>Cassia</i> cf. <i>arbores</i> , <i>Phoradendron perrottetii</i> , cf. <i>Phoradendron</i>
Pregnancy, childbirth and the puerperium	wound (skin cut for tattoo)	cure	2		<i>Eclipta prostrata</i>
	wound (caesarian section)	cure	4	9 (3)	<i>Asrocaryum sciophilum</i> , <i>Baobinia guianensis</i> , <i>Phoradendron perrottetii</i> , <i>Phoradendron</i> sp.
	colon problems during pregnancy	cure	1		<i>Actiois purpurascens</i>
	healing vagina after delivery	cure	3		<i>Siparuna guianensis</i> , <i>Lantana camara</i>

Table 2 | Continued

ICD classification of diseases and added categories	Health uses	Health promotion, disease prevention or cure	Nr of records per health use	Nr of records per disease category (%)	Species used to treat this health concern	
Certain conditions originating in the perinatal period	reduce water content in body after delivery	cure	1		<i>Mangifera indica</i>	
	wound navel baby (birth)	cure	2	2 (1)	<i>Stachytarpheta cayennensis</i> , <i>Symphonia globulifera</i>	
	General health	remain healthy skin	promotion	1	127 (42)	<i>Cocos nucifera</i>
		remain healthy hair	promotion	1		<i>Cocos nucifera</i>
	General health	refreshment	promotion	1		<i>Vismia guianensis</i>
		refreshment baby	promotion	1		<i>Lantana camara</i>
		refreshment baby after delivery	promotion	1		<i>Gossypium barbadense</i>
		refreshment mother after delivery	promotion	1		<i>Gossypium barbadense</i>
		refreshment vagina	promotion	2		<i>Camponanlesia aromatica</i>
		cleansing body general	promotion	4		<i>Bignonia nocturna</i> , <i>Eleusine indica</i>
cleansing face		promotion	1		<i>Eryngium foetidum</i>	
cleansing vagina		promotion	8		<i>Tabernaemontana cf. siphilitica</i> , <i>Terminalia amazonia</i> , <i>Dolichopus sp.</i> , <i>Maprounea guianensis</i> , <i>Hirtaea faginea</i> , <i>Clidemia hirta</i> , <i>Miconia sp.</i> , <i>Camponanlesia aromatica</i> , <i>Cecropia peltata</i> , <i>Cecropia sciadophylla</i>	
General health	cleansing vagina after delivery	promotion	3		<i>Terminalia amazonia</i> , <i>Dolichopus sp.</i> , <i>Lantana camara</i>	
	disguise bad smell of armpit/body	promotion	2		<i>Ocimum campechianum</i> , <i>Justicia pectoralis</i>	
	enhance sexual pleasure	promotion	2		<i>Camponanlesia aromatica</i> , <i>Sphagnetocola trilobata</i>	
	strength (general)	promotion	2		<i>Oenocarpus baaba</i> , <i>Quassia amara</i>	
	strength baby during pregnancy	promotion	5		<i>Anacardium cf. blitum</i> , <i>Attalea maripa</i> , <i>Euphorbia thymifolia</i> , <i>Smilax schomburgkiana</i>	
	strength baby	promotion	19		<i>Anacardium occidentale</i> , <i>Rolandra fruticosa</i> , <i>Maprounea guianensis</i> , <i>Fyppis lanceolata</i> , <i>Ocimum campechianum</i> , <i>Bauhinia sp.</i> , <i>Stuartzia sp.</i> , <i>Hirtaea faginea</i> , <i>Luehropsis cf. rosea</i> , <i>Piper pellatum</i> , <i>Ptyrogramma calomelanos</i> , <i>Bonara guianensis</i> , <i>Phoradendron perrottetii</i> , <i>Matayba cf. arborescens</i> , <i>Siparuna guianensis</i> , <i>Cecropia peltata</i>	

ICD classification of diseases and added categories	Health uses	Health promotion, disease prevention or cure	Nr of records per health use	Nr of records per disease category (%)	Species used to treat this health concern
	strength baby after delivery	promotion	7		<i>Spondias mombin</i> , <i>Inga</i> sp., <i>Lueheopsis</i> cf. <i>rosea</i> , <i>Musa</i> sp., <i>Piper marginatum</i> , <i>Banana guianensis</i>
	strength child	promotion	3		<i>Rolandra fruticosa</i> , <i>Ereola trifolia</i> , <i>Stachytarpheta cayennensis</i>
	strength mother after delivery	promotion	14		<i>Mangifera indica</i> , <i>Spondias mombin</i> , <i>Aristolochia</i> cf. <i>consmithii</i> , <i>Dolicoarpus</i> sp., <i>Vismia guianensis</i> , <i>Inga</i> sp., <i>Musa</i> sp., <i>Ludwigia hyssopifolia</i> , <i>Piper marginatum</i> , <i>Banana guianensis</i> , <i>Siparuna guianensis</i> , <i>Lantana camara</i> , <i>Lueheopsis</i> cf. <i>rosea</i>
	strength mother during pregnancy	promotion	5		<i>Amaranthus</i> cf. <i>blitum</i> , <i>Artalea maripa</i> , <i>Euphorbia thymifolia</i> , <i>Smilax schomburgkiana</i> , <i>Parkea pendula</i>
	<i>taangasinikuuwii</i>	promotion	34		<i>Annona muricata</i> , <i>Tabernaemontana undulata</i> , <i>Astrocaryum sciophilum</i> , <i>Mansoa alliacea</i> , <i>Hirtella</i> sp., <i>Rolandra fruticosa</i> , <i>Vismia guianensis</i> , <i>Bauhinia guianensis</i> , <i>Inga</i> sp., <i>Suarzta</i> sp., <i>Zygia cataractae</i> , <i>Hirtaea faginea</i> , <i>Ischnosiphon gracilis</i> , <i>Artocarpus altilis</i> , <i>Campomanesia aromatica</i> , <i>Duroia aquatica</i> , <i>Matayba</i> cf. <i>arborescens</i> , <i>Siparuna guianensis</i> , <i>Cecropia peltata</i> , <i>Cecropia sciadophylla</i> , <i>Stachytarpheta cayennensis</i>
	walk better baby	promotion	1		<i>Olyra latifolia</i>
	loose weight child	promotion	1		<i>Suarzta</i> cf. <i>schomburgkii</i>
	prevent cold after delivery	prevention	1		<i>Piper marginatum</i>
	prevent cold pregnant women	prevention	1		<i>Lantana camara</i>
	prevent bite mosquitos	prevention	1		<i>Carapa</i> cf. <i>guianensis</i>
	prevent bat bite	prevention	1		<i>Mansoa alliacea</i>
	prevent sika bites (<i>Tunga penetrans</i>)	prevention	1		<i>Solanum rugosum</i>
	prevent tick bites	prevention	3		<i>Dipteryx odorata</i> , <i>Carapa</i> cf. <i>guianensis</i>
Cultural illnesses	ward off evil	cure	15	16 (5)	<i>Eryngium foetidum</i> , <i>Costus scaber</i> , <i>Ocimum campechianum</i> , <i>Desmodium</i> cf. <i>incanum</i> , <i>Mimosa pudica</i> , <i>Senna quinqueangulata</i> , <i>Campomanesia aromatica</i> , <i>Piper marginatum</i> , <i>Soparia dulcis</i> , <i>Ptyrogramma calometanos</i> , <i>Citrus aurantiifolia</i> , <i>Selaginella novae-hollandiae</i> , <i>Siparuna guianensis</i>
	treat bad dreams	cure	1		<i>Lippia alba</i>

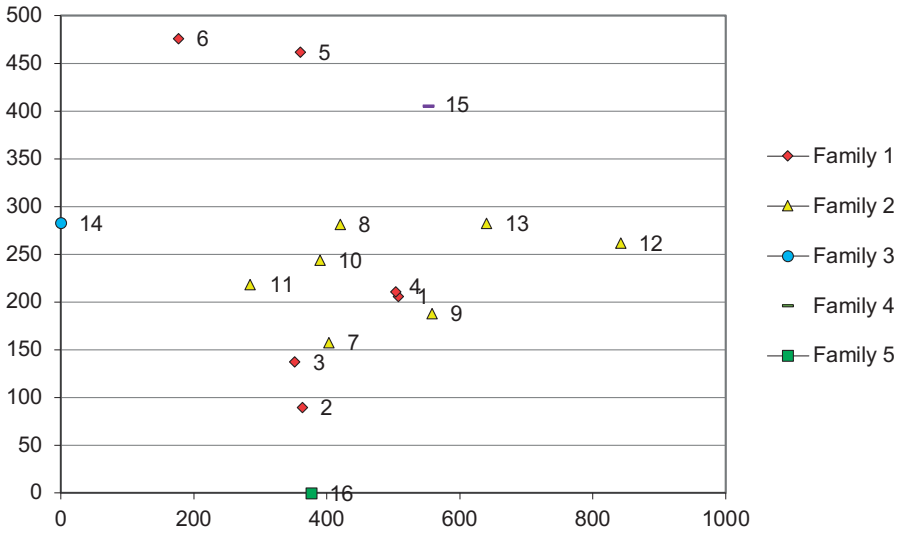


Figure 6 | Scatter plot showing similarity in plant knowledge on species level.

In line with our hypothesis that plant knowledge was kept within families, we would expect family members to cluster closely together. Members from family Δ clustered more together than the other respondents from other families, with respondent 12 showing most dissimilarity. This could be explained by the fact he had received some schooling from nurses on health promoting food plants with high levels of vitamin C. The other well-represented family (\blacklozenge) did not cluster as strongly and had distinctive outliers in respondents 5 and 6. Taking into consideration that females and males do have different gender-based tasks, it is no surprise that these two male respondents show dissimilarities in the overall clustering pattern for this family, sharing only four out of the total 72 species mentioned by this family. This gender-based knowledge was also mentioned during the interviews, when a number of respondents said that male and females had their own medicinal plant knowledge, which they transferred to their children. Male respondents said they did not know much about certain small plants and advised the researcher to talk to women. Men were said to know more about large trees. The plant knowledge of male respondents seemed much more scattered than that of the females, indicating that the women shared more of their knowledge. The two traditional healers (# 10 and 11), both males, formed no outliers and clustered to a certain extent together. Most of the plants they mentioned were used by others as well. However, the healers' preparations (recipes) were quite different from the other respondents. Especially their knowledge of treatments of wounds, cuts and bites, healing of caesarean sections (hospital delivery only) and bone setting methods stood out.

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The lack of strong clustering patterns among family members suggests that medicinal plant knowledge is gained from and shared with non-family members as well. Our interview data underscored this pattern of sharing: respondents indicated that medicinal plant knowledge was mostly gained from family members (54%) but also from friends (21%). The respondents shared their knowledge mainly with family members (87%), especially with their children (67%), but also with friends (13%). One respondent mentioned that he taught medicinal plant knowledge to his children while walking to his field. This transfer of knowledge was very important to him because his children had to make their own medicines in the future. According to some respondents, this transfer of traditional medical knowledge to children was negatively influenced by the school, since children attending the school during day time, could not learn about traditional medicines from their family anymore while walking to their fields where they work and collect plants during the day. Another respondent who had lost all his older family members in an early stage of his life, shared that he did not have the chance to learn from them about medicinal plants:

'I have to ask people in the village, ask the older men what I want to know. If they like you, then they teach you, but if they do not like you, they do not. Then they tell you go, go away, because you are not one of them, because people live here in families. If you are not part of my family you are not going to learn certain things.'

Another respondent confirmed that a person from a different family might prepare herbal medicine for you, but would not share how it was made, safeguarding their family-based knowledge. A third respondent confirmed that one needed to be close to the family to learn how to make the medicine. If people did not have the knowledge within the family, but needed a treatment, they had to pay for it. This shows that plant knowledge in Pikin Slee had economic value and treating others could create some sort of income. Respondents mentioned that payment was done traditionally in the form of gifts (*madyomina*), such as clothing or drinks or by paying money.

Next to learning from other people, respondents also mentioned to gain plant knowledge from spirits during dreams (13%), by interpretation of plant characteristics and properties (4%), observing animal behaviour (4%) or by trying them out themselves (4%), which further explains the variation in plant knowledge among the respondents. While dreaming, they said to be able to learn medicinal plant uses from forest spirits (e.g. *Apuku*), ancestors or unknown persons. One respondent told:

'I once dreamed about a medicine, yes, but I did not make it yet... I felt I did not have to make it yet. But I still know it and what I must look

for. Someone told me in a dream: I have to take this and this, for a herbal bath.... Yes, they say to you, you must use them for a certain purpose, yes.... I do not know the person no more, but I saw a woman. She came to show me things in my dream. I saw a woman I have never seen before in my life’.

Biomedical health care provision

The small health post, run by the Medical Mission, was responsible for promoting and securing physical, mental, and social well-being of the villagers following medical and Christian principles. The health workers (nurses) in charge of the post had differences in level and responsibilities, ranging from subscribing medicines, providing health education, giving vaccinations, treat wounds, conduct teeth extractions, infant consultations and deliveries. The health workers tried to follow a strict treatment schedule. While two days were said to be ‘general days’ on which patients could visit the health center with all types of health concerns, the other three days were especially for chronic patients, baby and child consultation, or for pregnant women. Patients having small wounds could come for treatment three days a week; people with leishmaniasis, skin burns or snakebites were treated instantly. Regular health concerns included fever, diarrhea, vomiting, epilepsy, leishmaniasis, snakebites, skin burns, wounds, sickle cell anaemia, headache, low and high blood pressure, anaemia, diabetes, toothache, deliveries, sexually transmitted diseases (STD’s) and HIV/AIDS. According to one health worker, high blood pressure was a serious problem in the village, but not easy to treat due to disbelief among patients:

‘We said you have to keep to a low salt content diet, on which she [the patient] replied: ‘I am not going to keep a low salt content diet, without salt I will die, when I do not use salt I start shaking, I will use my salt and my magi-cubes’, those small cubes [for cooking]’

For problems that the village health center could not treat, the people of Pikin Slee had to visit the main health post in Debike, 10 minutes away by boat. Patients who needed to be hospitalized, had to first travel by boat to the nearby village Botopasi and then take a small plane to Paramaribo to be treated in the private Diakonessenhuis (hospital). Pregnant women without complications (e.g., high blood pressure) were expected to deliver at the health center in the village.

Some respondents confirmed to go directly to the health center for certain health concerns, but did not specify for which ones. Reasons given for making use of modern health care were the easy and quick access to tablets, the dislike of the bitter herbal drinks, and a lack of knowledge to prepare herbal medicines. The latter was

regarded as an important problem:

'In the beginning there was no doctor in the interior and everyone knew what to do to keep their baby and children in good health. But now we lost some knowledge because people only want to use the medicine from the health center. Some young people don't know about the herbal baths anymore because they do not have time to ask someone. If you have a headache you go to the poli [health center] to get 'kalpol' or another medicine. I do not go to the poli, I make my own medicine. If you have a wound you go to the doctor and so special medical knowledge disappears and no one knows it anymore. This is a great loss for the people living in the interior, but also for the rest of the world who can use them'.

DISCUSSION

Patterns in medicinal plant use

The fact that we found 110 medicinal plant species, used for approximately 72 different health issues, reported by only 16 respondents, shows the extensive plant knowledge present in Pikin Slee. Prior research in other Saramaccan areas also noted this variety of traditional medicines (Ruysschaert et al., 2009; Van Andel and Ruysschaert, 2011; Ramdas, 2015). Most plant species used in Pikin Slee were also reported in these studies. Leaves were the most frequently used ingredient in the preparation of their herbal medicines, which was also observed in Africa (Lamorde et al., 2010; Davids et al., 2014; Diarra et al., 2015; Hughes et al., 2015; Ngarivhume et al., 2015), Asia (Singh et al., 2012; Rahmatullah et al., 2012) and South America (Bussmann and Glenn, 2010). This deviates from the work of Bussmann (2006), Bhattarai et al. (2010), Musa et al. (2011), Cheikhoussef et al. (2011) and Maroyi (2013), who observed that other plant parts, such as roots, were more important. Barks were mostly used in Pikin Slee in the preparation of 'blood purifying bitters' which were mostly made by men and kept in bottles indoors, as also described by Van Andel et al. (2007).

The extensive use of herbal baths among Saramaccan has also been reported by Ruysschaert et al. (2009), who addressed the importance of bathing to promote baby and child care, and Van Andel et al. (2008) who described the extensive use of genital steam baths to clean or tighten the vagina, disguise a bad smell or to enhance sexual pleasure. Herbal bathing can be considered as an essential part of Saramaccan culture. Van Andel and Van 't Klooster (2007) showed that Saramaccan migrants living in the Netherlands continue using herbal baths.

Distribution of plant knowledge

Our assumption that medicinal plant knowledge would be kept secret within families, said to be a Saramaccan tradition, proved to be incorrect when looking on the species level. Although some overlap in plant species mentioned by our respondents was visible, strong similarities within families did not exist. One reason for this lack of family-based, exclusive species knowledge could be that the respondents only shared common species knowledge with the researcher, meaning that their secret family knowledge, if any existed, might not have been addressed at all. However, it seems likely that this plant knowledge of family members is shared with others as well. Interview data confirmed that plant knowledge is shared with close friends and can be individually gained e.g. via dreams, further contributing to the variation in knowledge, which was also reported in Bolivia by Vandebroek et al. (2004), in Ethiopia by Kidane et al. (2014) and in India by Terangpi et al. (2015). It may also be possible that the secret family knowledge deals more with specific preparations (recipes) or applications (e.g. bone setting), including associated incantations, prayers, etc.

Health promotion, disease prevention and cure

Our finding that most plant use reports and disease categories were related to cure, followed by health promotion and disease prevention came as a surprise, knowing that biomedical health care provisions were available in the village. Our hypothesis that traditional herbal medicine in Pikin Slee was mostly used for health promotion should therefore be rejected. This result contrasts with the study by Ruysschaert et al. (2009) among Saramaccans in Brownsweg (Brokopondo district), where health promotion and disease prevention scored higher than potentially life-threatening conditions like diarrhea or respiratory infections. This might be explained by the fact that our study area was far more remote than Brownsweg, and only accessible by boat or airplane after a long ride by road. Biomedical care was only available at the village health center, making the people in Pikin Slee more dependent on medicinal plants compared to Brownsweg, where biomedical care and basic pharmaceuticals like paracetamol were cheap and easily available (Ruysschaert et al., 2009). Another explanation might be that Ruysschaert et al. (2009) focused especially on baby care, in which health promotion plays a significant role, while our study focused on all traditional medicines within the community.

With almost 40% of the plant use reports related to health promotion, especially to strength, the Saramaccan ethno-medical system is focusing on the well-being of the body and mind. Both need to be strong to survive in the rainforest, which encompasses living in harmony with the various types of spirits that inhabit their village and direct surroundings. A disruption of the balance between human beings

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and nature or the spiritual world can lead to health discomfort of various degrees. Remaining strong and healthy is therefore a major concern. The strong relationship between the human, natural and spiritual world has been described by Haverkort et al. (2003) for sub-Saharan African cultures in which the natural world provides the habitat for spirits that can send messages to the human world providing guidance, punishment and blessings to human beings. In many other African belief systems, good health is holistically addressed and also extends to the person's social environment (Cocks and Møller, 2002; Geissler et al., 2002). This holistic concept is also found in the pan Caribbean Creole medical system (Longuefosse and Nossin, 1996). Our research supports other studies that indicated the preference to treat cultural illnesses with traditional medicine (Quinlan, 2010; Mathez-Stiefel et al., 2012; Vandebroek, 2013; Towns et al., 2014), because the disturbance in health caused by external agents, such as evil spirits, needs to be treated by performing cultural practices. Such cultural illnesses could be of interest to biomedical health care providers, not only because they often make up a significant portion of local health concerns, but they also may address underlying neglected diseases (Towns et al., 2014).

Modern healthcare, however, focuses mainly on cure and disease prevention (via education and tools), but not specifically on health promotion. In Pikin Slee, disease prevention was related to insect and animal bites. Contrary to Ruyschaert et al. (2009), who suggested that plants known as *tranga wiwiri* (Sranantongo word comparable to the *taangasinkiuwii*) were used in herbal baths to prevent diseases, we classified *taangasinkiuwii* baths as health promotion, since our respondents used these baths to remain strong. This was evidenced by the fact that hardly any respondent made a reference to negative health results by not taking these baths, averting the co-occurrence of a disease or halting the progression of a disease from its early unrecognized stage to a more severe one, as defined by Breslow (1999).

Traditional medicine vs biomedical health care: choice or necessity?

In Pikin Slee, the variety of medicinal plants used proved that traditional medicine was very important, although biomedical care was available. In total, 35% of the types of health uses recorded could be considered as 'cultural', which, according to the respondents, could only be treated with traditional medicines. The remaining ailments could in principle be treated with modern medicine from the health center. We expected that health concerns that could be successfully treated by local biomedical facilities would be less salient in herbal medicine practices, but we have to reject this hypothesis. Apparently, people made a deliberated choice for using medicinal plants. This finding is consistent with earlier arguments that herbal medicine is not only a necessity, but also a deeply rooted cultural preference

(Bussmann et al., 2007; Pieroni and Vandebroek, 2007; Van Andel and Carvalheiro, 2013). This strong preference towards traditional practices in Pikin Slee may be related to their objection against Christianity.

The popularity of traditional medicine is related to its three features of inclusiveness, all-roundness and flexibility (Vandebroek et al., 2008). Traditional medicine is generally found in agreement with and inclusive of local belief systems and explanatory models of illness, and also deals with a diverse array of local health conditions and is more practical in the sense that flexible payment options existed. As long as the cultural importance of a clean body and soul persists within the Saramaccan culture, the associated medicinal plants and cultural practices will be continued, even if access to modern health care facilities is improved. Our findings that treatments offered by traditional medicine are both overlapping with and complementary to biomedical health care was also reported for Bolivia (Vandebroek et al., 2008).

Further research

This work should be understood as an explorative study on ethnomedical practices in a remote Saramaccan community. Although only a small number of people were interviewed we believe that the results sufficiently represent local Saramaccan herbal practices, but do not represent the entire Saramaccan population. The nature of individual variation in knowledge, skills and beliefs, should be taken in to account, the notion of 'partial truths' (Clifford, 1986:7-8 in Price and Price, 1999:3). Further research with more respondents is advisable. Furthermore, diseases within the Saramaccan medical system are not directly interchangeable with the biomedical system, especially cultural illnesses with a 'spiritual cause'. They do not fit in the physical explanatory model, which attributes ailments and illnesses to a disruption of bodily physiological processes, but fit more into a psycho-sociological explanatory model that attributes ailments and illnesses to thoughts or emotions from oneself or from another person directed to you, which is usually a result from social factors (Lynch and Medin, 2006). Examining health seeking behaviour in more detail to understand patients' steps taken in searching for treatments could clarify further the co-occurrence of modern and traditional treatments for the same diseases (Towns et al., 2014). An in-depth study to examine people's attitudes towards the quality of the available healthcare options would be a logical follow-up of this study. Care provided by the health centers could be enriched if traditional knowledge, illness concepts, and medicinal plant uses could fit into a larger framework that studies healthcare from a community perspective.

CONCLUSION

Saramaccan Maroons in Pikin Slee showed to have a rich ethnomedical knowledge. Knowledge of plant species was shared with family but also with friends, while family secrets were probably in the details of the preparation and applications. Herbal baths were the most dominant form of application. Plant uses reflected actual health concerns and were more associated with cure and health promotion than with disease prevention. Since most health concerns treated with traditional medicines could also be treated with locally available modern medicine, the use of plants can be considered as a cultural preference. Our study shows that modern health care does not necessarily displace traditional health care provisions and that both can coexist in providing primary health care. Since biomedical care does not address cultural illnesses nor focusses on health promotion, traditional herbal medicines keep playing an important role. More research is needed to clarify the contribution of traditional herbal medicines per health concern and the underlying factors influencing Saramaccan health seeking behaviour.

Supplementary table S1 | Overview of medicinal plant species recorded.

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^a)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Acanthaceae	<i>Justicia pectoralis</i> Jacq.	1	papauwii (Sa)	1	disguise bad smell	1	whole plant	crush and apply compress on armpit with water
Amaranthaceae	<i>Amaranthus cf. blitum</i> L.	2	finiklarun (Sr)	2	strength mother during pregnancy strength baby during pregnancy	1	root	drink decoction with roots of <i>Attalea maripa</i> and <i>Smilax schomburgkiana</i>
	<i>Amaranthus cf. dubius</i> Mart. ex Thell.	1	mboxa (Sa)	1	fever	1	root	drink decoction with roots of <i>Attalea maripa</i> and <i>Smilax schomburgkiana</i>
	<i>Amaranthus</i> sp.	1	mboxa (Sa)	1	pimples on skin	1	leaves	bathe with decoction
Amaryllidaceae	<i>Allium sativum</i> L.	1	knoflook (Du)	1	toothache	1	clove	apply poultice of crushed garlic with water on piece of cotton on wrist for 45 min till pain is gone and apply clove in right nostril if toothache is on left side (and other way around)
Anacardiaceae	<i>Anacardium occidentale</i> L.	5	kadyu (Sa)	5	bone fracture wound strength baby cough stop bleeding after tooth extraction	1	leaves	apply decoction on bone fracture, dab gently
	<i>Mangifera indica</i> L.	5	manya (Sa)	5	bone fracture wound reduce water content in body after delivery strength mother after delivery	1	leaves	apply decoction on wound, dab gently
							leaves	bathe with decoction
					high blood pressure	1	leaves	drink decoction
	<i>Spondias dulcis</i> Parkinson	1	pommesitair (Sr)	1	high blood pressure	1	leaves	drink decoction
	<i>Spondias mombin</i> L.	4	mompe (Sa)	4	bone fracture	1	leaves	apply with a mixture of crushed <i>Casuarina arborea</i> and <i>Phoradendron perrottetii</i> leaves in oil on the fracture (poultice)
					wound	1	leaves	apply with a mixture of crushed <i>Casuarina arborea</i> and <i>Phoradendron perrottetii</i> leaves in oil on the wound as poultice
					strength mother after delivery	1	leaves	bathe with decoction
					strength baby after delivery	1	leaves	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^s)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Annonaceae	<i>Annona muricata</i> L. (CK114)	5	alakutu (Sa)	5	bone fracture wound	1	leaves	apply decoction on bone fracture, dab gently
					taangasinkuwii	1	leaves	apply decoction on wound, dab gently
					dizziness	1	leaves	bathe with decoction
					high blood pressure	1	leaves	crush leaves and apply cold infusion on head, dab gently
	<i>Xylopia discreta</i> (L.f.) Sprague & Hutch.	2	kunye (Sa)	2	bone fracture	1	seeds	drink decoction apply oil on skin with other unknown plants as poultice
Apiaceae	<i>Eryngium foetidum</i> L. (CK32)	6	kwentu (Sa)	5	wound ward of evil	1	seeds	apply oil on skin with other unknown plants as poultice
						1	leaves	bathe with decoction with <i>Citrus aurantifolia</i> and 'blauwsel' (powder that contains a blue dye or pigment that absorbs the yellow part of the spectrum of colors and this makes white clothing)
					vocal cord problems	1	leaves	chew on and swallow juice
					cleansing face	1	leaves	crush and apply as compress on face
Apocynaceae	<i>Griseospermum sericeum</i> Miers (CK107)	1	lelebita (Sa)	1	diarrhea	1	leaves	crush in hands and apply juice drops in mouth
	<i>Tabernaemontana cf. siphilitica</i> (L.f.) Leeuwenb.	1	kapiua-uwii (Sa)	1	cleansing vagina	1	leaves	crush in hands and apply as compress on face or body
	<i>Tabernaemontana undulata</i> Vahl (CK82)	3	kètengpósu (Sa)	3	cold	1	leaves	drink decoction
						1	leaves	drink as hot infusion (tea)
Araceae	<i>Xanthosoma sagittifolium</i> (L.) Schott	1	tayerblad (Str)	1	anaemia	1	leaves	bathe with decoction
	<i>Astrocaryum sciophilum</i> (Miq.) Pullé	6	maka (Sa)	4	bonefracture	2	seeds	bathe with decoction drink decoction stir-fry and eat
					wound	2	seeds	apply oil on body with mixture of other unknown herbs as poultice
Arecaceae	<i>Astrocaryum sciophilum</i> (Miq.) Pullé	6	maka (Sa)	4	bonefracture	2	seeds	apply oil on body with mixture of other unknown herbs as poultice
					wound	2	seeds	apply oil on body with mixture of other unknown herbs as poultice
					taangasinkuwii	1	leaves	bathe with decoction
				caesarian section	1	seeds	crush leaves of <i>Phoradendron perrotetii</i> , <i>Phoradendron</i> sp. and <i>Bauhinia guianensis</i> and mix with fat from <i>Astrocaryum sciophilum</i> seeds and apply on wound as poultice	

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^e)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
	<i>Asrocaryum nugeae</i> Mart.	1	awaa (Sa)	1	constipation	1	fruit	peel and eat fruit
	<i>Aralia maripa</i> (Aubl.) Mart.	2	maipa (Sa)	2	strength mother during pregnancy	1	root	drink decoction with roots of <i>Asrocaryum sciophilum</i> and <i>Smilax schomburgkiana</i>
	<i>Bactris gasipaes</i> Kunth	1	amana (Sa)	1	constipation	1	fruit	peel and eat fruit
	<i>Cocos nucifera</i> L.	5	coconoto (Sa)	5	remain healthy hair	1	seed	apply coconut oil in hair
					backache	1	seed	apply coconut oil on body
					remain healthy skin	1	seed	apply coconut oil on body (as body lotion)
					bone fracture	1	seed	apply coconut oil on body with a mixture of herbs (unknown)
					wound	1	seed	apply coconut oil on body with a mixture of herbs (unknown)
	<i>Oenocarpus bacaba</i> Mart.	2	kumu (Sa)	2	constipation	1	fruit	drink pulp of fruits mixed with water
					strength in general	1	fruit	drink pulp of fruits mixed with water
	<i>Aristolochia cf. costimilis</i> Mast.	5	loangoratai (Sa)	2	stomach-ache	1	root	drink cold infusion (also with roots of <i>Quassia amara</i>)
					stomach-ache	3	leaves	drink decoction
					strength mother after delivery	1	leaves	drink decoction
	<i>Bignonia nocturna</i> (Barb. Rodt.) L.G. Lohmann (CK64)	1	watuwanu (Sa)	1	cleansing body	1	leaves	bathe with decoction
	<i>Mansoa alliacea</i> (Lam.) A. H. Gentry (CK48)	3	ajuntè (Sa)	2	general	1	leaves	bathe with decoction
					taangasinkuwii	1	leaves	bathe with decoction
					taangasinkuwii	1	leaves	bathe with decoction with leaves of <i>Suarizia</i> sp. and <i>Cecropia sciadophylla</i>
	<i>Trema micrantha</i> (L.) Blume (CK83)	1	piikunpau (Sa)	1	prevent bites bats	1	leaves	hang in house to avoid bats
	<i>Carica papaya</i> L.	1	ma mau (Sa)/ papaya (Sr)	1	fever	1	leaves	bathe with decoction
	<i>Chrysobalanaceae</i>				worms	1	fruit	peel and eat fruit
	<i>Hirtella</i> sp. (CK112)	1	basouwii (Sa)	1	taangasinkuwii	1	whole plant	bathe with decoction
	<i>Clusiaceae</i>				healing navel baby	1	leaves	dry leaves in the sun and apply powder of crushed leaves on navel of baby with little salt

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^e)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Combretaceae	<i>Terminalia amazonia</i> (J.F.Gmel.) Exell (CK104/ CK113)	2	anangosuri (Sa)	2	cleansing vagina	1	leaves	bathe with decoction
					cleansing vagina after delivery	1	leaves	bathe with decoction
Compositae	<i>Terminalia catappa</i> L.	1	amandl (Sa)	1	high blood pressure	1	leaves	drink decoction
	<i>Eclipta prostrata</i> (L.) L. (CK30)	3	totobia (Sa)	2	tatoeage wound	2	leaves	apply crushed leaves on wound as compress
Compositae	<i>Rolandra fruticosa</i> (L.) Kuntze (CK31)	6	bookopangi (Sa)	4	eye problems cough	1 1	leaves whole plant	crush leaves and apply drops of juice in eye bathe with decoction
				taangasinkuwii	3	whole plant	bathe with decoction	
				strength baby	1	whole plant	bathe with decoction with leaves from <i>Hypsis lanceolata</i>	
				strength child	1	whole plant	bathe with decoction with leaves from <i>Eretela trifolia</i>	
				enhance sexual pleasure	1	leaves	bathe with decoction	
Compositae	<i>Sphaeneticola trilobata</i> (L.) Pruski (CK45)	3	azokopampa (Sa)/ zonnebloem (Sr)	3	eye problems itching skin	1 1	leaves leaves	bathe with decoction bathe with decoction
	<i>Unxia camphorata</i> L.f. (CK55)	6	kanfu(bita) (Sa)	6	fever	1	whole plant	bathe with decoction
Compositae				itching vagina and uterus	1	whole plant	bathe with decoction	
				pimples on skin baby	1	whole plant	bathe with decoction	
				itching skin	1	whole plant	bathe with decoction	
				diarrhea	1	whole plant	drink decoction	
Compositae				stomach-ache	1	whole plant	drink decoction	
	<i>Costus scaber</i> Ruiz & Pav. (CK81)	1	sangafu (Sa)	1	ward of evil	1	whole plant	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^a)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Crassulaceae	<i>Bryophyllum pinnatum</i> (Lam.) Oken. (CK51)	2	afombugadu (Sa)	2	swollen feet	1	leaves	apply decoction on skin
Curcubitaceae	<i>Momordica charantia</i> L. (CK52)	1	bakulusopropro (Sa)	1	relieve pain on affected area itching skin	1	leaves	heat a leaf and apply compress directly on skin bathe with decoction
Cyperaceae	<i>Cyperus laxus</i> Lam. (CK111)	1	pingupingu (Sa)	1	menstruation pain	1	leaves	drink hot infusion (tea)
Dilleniaceae	<i>Dolnicarpus</i> sp. (CK85)	3	faiatatai (Sa)	3	cleansing vagina cleansing vagina after delivery	1	leaves	bathe with decoction bathe with decoction
Euphorbiaceae	<i>Euphorbia hirta</i> L. (CK97)	1	bobibobi (Sa)	1	strength mother after delivery worms in skin	1	leaves	bathe with decoction (till 7 months after delivery)
Euphorbiaceae	<i>Euphorbia hymifolia</i> L. (CK102)	3	tyembeuwii (Sa)	2	strength mother during pregnancy strength baby during pregnancy	2	whole plant	crush and apply milky juice on affected place drink hot infusion (tea)
Euphorbiaceae	<i>Jatropha curcas</i> L. (CK49)	3	pooka (Sa)	3	pimples on skin toothache	1	leaves	apply resin of leaf stem on skin crush leaves and apply juice in mouth after extraction
Euphorbiaceae	<i>Maprounea guianensis</i> Aubl. (CK115)	4	kisangola (Sa)	4	constipation cleansing vagina	1	seeds	peel and eat seeds from fruit bathe with decoction
Euphorbiaceae					fever (baby)	1	leaves	bathe with decoction with leaves of <i>Siparuna guianensis</i> and <i>Banana guianensis</i>
Euphorbiaceae					strength baby	1	leaves	bathe with decoction with leaves of <i>Siparuna guianensis</i> and <i>Banana guianensis</i>
Hypericaceae	<i>Vismia guianensis</i> (Aubl.) Pers. (CK78)	3	beebakapindyapau (Sa)	3	eye problems refreshment	1	leaves	bathe with decoction bathe with decoction
Hypericaceae					taangasinkuwii	1	leaves	bathe with decoction
Hypericaceae					strength mother after delivery	1	leaves	bathe with decoction with leaves of <i>Camponanisia aromatica</i> and <i>Siparuna guianensis</i>
Lamiaceae	<i>Hyptis lanceolata</i> Poir. (CK33)	5	dyanafafia (Sa)	3	strength baby	1	whole plant	bathe with decoction with <i>Rolandra fruticosa</i>

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ¹)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
					cold	1	whole plant	drink decoction
					cough	3	whole plant	drink decoction
	<i>Hyptis mutabilis</i> (Rich.) Briq.	1	gadupaipina (Sa)	1	headache	1	whole plant	bathe with decoction
	<i>Ocimum campechianum</i> P. Mill. (CK41)	6	bonu-uwii (Sa)	5	disguise bad smell body fever	1	whole plant	bathe with decoction
					headache	1	whole plant	bathe with decoction
					ward of evil	2	whole plant	bathe with decoction
					strength baby	1	whole plant	bathe with decoction with leaves of <i>Banara guianensis</i> , <i>Macrobium</i> sp. and <i>Himaea faginea</i>
Leguminosae	<i>Bauhinia guianensis</i> Aubl. (CK106)	4	logosikada (Sa)	3	caesarian section wound	1	leaves	apply crushed leaves with leaves of <i>Phoradendron perottetii</i> and <i>Phoradendron</i> sp. and fat from <i>Astrocarpum sciophilum</i> seeds on wound
					taangasinikuwii	1	leaves	bathe with decoction
					taangasinikuwii relieve pain in foot/ hand	1	leaves	bathe with decoction with <i>Zygia cataractae</i>
	<i>Bauhinia</i> sp. (CK84)	1	okobuka (Sa)	1	strength baby	1	leaves	bathe with decoction
	<i>Desmodium</i> cf. <i>incanum</i> DC. (CK35)	1	mapindapinda (Sa)	1	ward of evil	1	whole plant	bathe with decoction with <i>Soparia dulcis</i>
	<i>Diperyx odorata</i> (Aubl.) Willd.	1	tonka (Sa)	1	prevent tick bites	1	seeds	crush oil out of seeds and apply on body
	<i>Hymenaea courbaril</i> L. (CK87)	1	lokisi (Sa)	1	stomach-ache	1	resin	crush hot infusion of stamped resin (put in piece of cloth in tea)
	<i>Inga</i> sp. (CK38)	3	(atai) wagri (Sa)	3	taangasinikuwii strength mother after delivery	1	leaves	bathe with decoction
					strength baby after delivery	1	leaves	bathe with decoction
	<i>Macrobium</i> sp. (CK39)	4	lokoti (bita) (Sa)	4	strength mother after delivery	1	leaves	bathe with decoction with leaves of <i>Ocimum campechianum</i> , <i>Banara guianensis</i> and <i>Himaea faginea</i>

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
					strength baby after delivery	1	leaves	bathe with decoction with leaves of <i>Ocimum campechianum</i> , <i>Banana guianensis</i> and <i>Hiraea faginea</i>
					diarrhea	1	leaves	drink decoction
					stomach-ache	1	leaves	drink decoction
	<i>Mimosa pudica</i> L. (CK40)	1	seemai (Sa)	1	ward of evil	1	leaves	bathe with decoction
	<i>Parkia pendula</i> (Willd.) Walp.	2	kwatakama (Sa)	2	strength mother during pregnancy	1	bark	bathe with decoction
					stomach-ache	1	bark	drink decoction
	<i>Senna quinquefolata</i> (Rich.) H.S. Irwin & Bameby (CK34)	1	komanti sangu (Sa)	1	ward of evil	1	leaves	bathe with decoction
	<i>Suarzizia cf. schomburgkii</i> Benth. (CK65)	1	bugubugu (Sa)	1	loose weight child	1	leaves	bathe with decoction
	<i>Suarzizia</i> sp. (CK58)	7	hogipau (Sa)	2	taangasinkiuwii strength baby	5	leaves	bathe with decoction
					strength baby	1	leaves	bathe with decoction with leaves of <i>Matayba cf. arborescens</i>
					strength baby	1	bark	bathe with decoction <i>Suarzizia</i> sp. with leaves of <i>Matayba cf. arborescens</i>
	<i>Zygia cataractae</i> (Kunth) L. Rico	2	dyabé (Sa)	2	Fever	1	leaves	bathe with decoction
Malpighiaceae	<i>Hiraea faginea</i> (Sw.) Nied. (CK92)	3	alatupau (Sa)	3	taangasinkiuwii cleansing vagina	1	leaves	bathe with decoction with <i>Hiraea faginea</i>
					strength baby	1	leaves	bathe with decoction
					taangasinkiuwii	1	leaves	bathe with decoction with leaves of <i>Matayba cf. arborescens</i> and <i>Stachytarpheta cayennensis</i>
Malvaceae	<i>Stigmaphyllon sinuatum</i> (DC.) A. Juss. (CK79)	1	dyanatatai (Sa)	1	body pain	1	leaves	bathe with decoction
	<i>Gossypium barbadense</i> L. (CK57)	3	beemauwii (Sa)	3	ear-ache	1	leaves	apply decoction on cotton to drop in ear
					refreshment mother after delivery	1	leaves	bathe with decoction
					refreshment baby after delivery	1	leaves	bathe with decoction
	<i>Lueheopsis cf. rosea</i> (Ducke) Burret	4	mau (Sa)	4	strength baby	1	leaves	bathe with decoction
					strength mother after delivery	1	leaves	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^s)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Marantaceae	<i>Ischnosiphon gracilis</i> (Rudg.) Körn. (CK69)	2	babadua (Sa)	1	strength baby after delivery	1	leaves	bathe with decoction
					pimples on skin child	1	leaves	bathe with decoction with resin of <i>Jatropha curcas</i>
					taangasinkuwii	1	leaves	bathe with decoction
Melastomataceae	<i>Aciois purpurascens</i> (Aubl.) Triana	3	sombouwii (Sa)	3	taangasinkuwii	1	leaves	bathe with decoction with leaves of <i>Suarizia</i> sp.
					colon problems during pregnancy	1	leaves	apply decoction with <i>Justicia pectoralis</i> on colon area
					body pain	1	leaves	crush leaves and apply juice drops on boil
Meliaceae	<i>Clademia hirta</i> (L.) D. Don <i>Miconia</i> sp. <i>Canapa</i> cf. <i>guianensis</i> Aubl.	5	kaapa (Sa)	4	kodyitanda (Sa)	1	leaves	heat leaf in fire and apply on body
					cleansing vagina	1	leaves	bathe with decoction
					cleansing vagina	1	leaves	bathe with decoction
					prevent tick bites	2	seeds	crush and apply oil on body
					prevent mosquito bites	1	seeds	crush and apply oil on body with a mixture of leaves of <i>Suarizia</i> sp., <i>Matayba</i> cf. <i>arborescens</i> , <i>Siparuna guianensis</i> , <i>Annona muricata</i> and <i>Rolandra fruticosa</i>
Moraceae	<i>Artocarpus altilis</i> (Parkinson ex F.A. Zorn) Fosberg	2	beibo (Sa)	2	bone fracture	1	seeds	crush and apply oil on body with a mixture of other herbs
					wound	1	seeds	crush and apply oil on body with a mixture of other herbs
					worms in skin	1	leaves	apply juice on affected place
Musaceae	<i>Musa</i> sp.	3	banaan (Du)	3	taangasinkuwii	1	leaves	bathe with decoction
					strength mother after delivery	1	leaves	bathe with decoction
Myrtaceae	<i>Campomanesia aromatica</i> (Aubl.) Griseb. (CK28)	9	adoya (Sa)	8	strength baby after delivery	1	leaves	bathe with decoction
					constipation	1	fruit	peel and eat fruit
					cleansing vagina	1	leaves	bathe with decoction
					fever	1	leaves	bathe with decoction
					refreshment vagina	2	leaves	bathe with decoction
-----					taangasinkuwii	1	leaves	bathe with decoction
					healing vagina after delivery	1	leaves	bathe with decoction
					enhance sexual pleasure	1	leaves	bathe with decoction
						1	leaves	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^a)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
					menstruation pain	1	leaves	bathe with decoction
					ward of evil	1	leaves	bathe with decoction with leaves of <i>Siparuna guianensis</i> , a tail of parrot (papakai labu) and a type of shell (papamoni)
Onagraceae	<i>Psidium guajava</i> L.	1	guyaba (Sa)	1	haemorrhoids	1	leaves	drink decoction
	<i>Ludwigia lysiofilia</i> (G. Don) Exell (CK105)	1	kontakafuru (Sa)	1	strength mother after delivery	1	leaves	bathe with decoction
Passifloraceae	<i>Passiflora</i> sp.	1	pikinmakudja (Sa)	1	fever	1	leaves	bathe with decoction
Piperaceae	<i>Peperomia pellucida</i> (L.) Kunth (CK37)	4	konsaka (Sa)	3	eye problems	1	leaves	crush and apply juice of leaves (pressed in piece of cloth) in eye
					eye problems	1	leaves	crush and apply juice of leaves in eyes and head
					high blood pressure	1	leaves	drink hot infusion
					stop bleeding after tooth extraction	1	leaves	gargle with hot infusion to which a drop of vinegar is applied.
	<i>Piper marginatum</i> Jacq. (CK46)	4	pikin malombe lombe (Sa)	4	prevent cold after delivery	1	leaves	bathe with decoction
					strength mother after delivery	1	leaves	bathe with decoction
					strength baby after delivery	1	leaves	bathe with decoction
	<i>Piper pelatum</i> L. (CK47)	1	gaan malombe lombe (Sa)	1	ward of evil	1	leaves	bathe with decoction
					strength baby	1	leaves	bathe with decoction
Plantaginaceae	<i>Scoparia dulcis</i> L. (CK44)	2	lembekonde (Sa)	2	ward of evil	1	whole plant	bathe with decoction with <i>Desmodium cf. incanum</i>
					high blood pressure	1	whole plant	drink hot infusion
Poaceae	<i>Cymbopogon citratus</i> (DC.) Stapf (CK110)	4	asonuma (Sa)	3	cold	1	leaves	bathe with decoction
					cough	2	leaves	drink hot infusion
					fever	1	leaves	drink hot infusion
	<i>Eleusine indica</i> (L.) Gaertn. (CK108)	2	mazkázika (Sa)	2	high blood pressure	1	whole plant	drink hot infusion
					cleansing body general	1	whole plant	drink hot infusion
	<i>Olyra latifolia</i> L. (CK101)	1	dagua-alisi (Sa)	1	walk better baby	1	whole plant	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^e)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Peridaceae	<i>Ptyrogramma calomelanos</i> (L.) Link (CK91)	4	wetibaka (Sa)	3	strength baby ward of evil	1 2	leaves whole plant	bathe with decoction bathe with decoction
Rubiaceae	<i>Duroia aquatica</i> (Aubl.) Bremek. (CK72)	1	mamadosu (Sa)	1	menstruation pain	1	leaves	drink cold infusion (no boiling)
Rutaceae	<i>Citrus aurantifolia</i> (Christm.) Swingle	3	lemmetje (Sr)	3	fever ward of evil	1 1	leaves fruit	bathe with decoction bathe with decoction with <i>Eryngium foetidum</i> and 'blauwsel' (powder that contains a blue dye or pigment that absorbs the yellow part of the spectrum of colors and this makes white clothing)
Salicaceae	<i>Citrus limon</i> (L.) Osbeck	1	citroen (Du)	1	cough	1	fruit	drink juice with salt
	<i>Erythra trifolia</i> (L.) Kuntze	1	kofimbasa (Sa)	1	cough	1	fruit	drink juice with sugar
	<i>Banara guianensis</i> Aubl. (CK95)	7	akubagon (Sa)	7	strength child fever pimples on body skin	1 1 1	leaves leaves leaves	bathe with decoction prepared with <i>Rolandra fruticosa</i> bathe with decoction bathe with decoction
					fever baby	1	leaves	bathe with decoction
					strength baby	1	leaves	bathe with decoction with leaves of <i>Siparuna guianensis</i> and <i>Maprounea guianensis</i>
					strength mother after delivery	1	leaves	bathe with decoction with of leaves of <i>Siparuna</i> <i>guianensis</i> and <i>Maprounea guianensis</i>
					strength baby after delivery	1	leaves	bathe with decoction with leaves of <i>Macrobolium</i> sp., <i>Ocimum campechianum</i> and <i>Hiraea faginea</i> bathe with decoction with leaves of <i>Macrobolium</i> sp., <i>Ocimum campechianum</i> and <i>Hiraea faginea</i> drink decoction
	<i>Casearia</i> cf. <i>arborea</i> (Rich.) Urb.	2	kappau (Sa)	2	stomach-ache bone fracture	1 1	leaves leaves	apply a mixture of leaves of <i>Casearia</i> cf. <i>arborea</i> , <i>Spondias</i> <i>mombin</i> and <i>Phoradendron perrottetii</i> in oil on the fracture (poultice)
				wound	1	leaves	apply a mixture of leaves of <i>Casearia</i> cf. <i>arborea</i> , <i>Spondias</i> <i>mombin</i> and <i>Phoradendron perrottetii</i> in oil on the wound (poultice)	

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^a)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
Santalaceae	<i>Phoradendron perrottetii</i> Nutt. (CK109)	5	pikifokaka (Sa)	5	bone fracture	1	leaves	apply a mixture of leaves of <i>Phoradendron perrottetii</i> , <i>Casaria arborea</i> and <i>Spondias mombin</i> in oil on the fracture (poultice)
					wound	1	leaves	apply a mixture of leaves of <i>Phoradendron perrottetii</i> , <i>Casaria arborea</i> and <i>Spondias mombin</i> in oil on the wound (poultice)
					strength baby	1	leaves	bathe with decoction
					back ache	1	leaves	bathe with decoction
					caesarian section wound	1	leaves	crush with leaves of <i>Bauhinia guianensis</i> and <i>Phoradendron</i> sp., and add fat from <i>Astrocaryum sciophilum</i> seeds and apply on wound (poultice)
Sapindaceae	<i>Mattaya</i> cf. <i>arborescens</i> (Aubl.) Radlk. (CK74)	9	gawinti (Sa)	3	bone fracture	1	leaves	apply a mixture of leaves of cf. <i>Phoradendron</i> sp., <i>Casaria arborea</i> , <i>Spondias mombin</i> and <i>Phoradendron perrottetii</i> in fat on the fracture (poultice)
					wound	1	leaves	apply a mixture of leaves of cf. <i>Phoradendron</i> sp., <i>Casaria arborea</i> , <i>Spondias mombin</i> and <i>Phoradendron perrottetii</i> in fat on the wound (poultice)
					caesarian section wound	1	leaves	crush leaves of <i>Phoradendron</i> sp. with <i>Phoradendron perrottetii</i> , <i>Bauhinia guianensis</i> and add fat from <i>Astrocaryum sciophilum</i> seeds and apply on wound (poultice)
Selaginellaceae	<i>Quasisa amara</i> L.	12	kwasibira (Sa)	4	strength baby	1	leaves	bathe with decoction
					strength baby	1	leaves	bathe with decoction with leaves of <i>Suarzeia</i> sp.
					taangasinkuwii	4	leaves	bathe with decoction with leaves of <i>Suarzeia</i> sp.
					stomach-ache	1	leaves	bathe with decoction
					stomach-ache	1	bark	bathe with decoction
					ward of evil	1	whole plant	bathe with decoction
					leismaniasis	2	bark	drink cold infusion
					strength in general	1	bark	drink cold infusion
					relieve mosquito bites	1	leaves	drink cold infusion to clean blood
					relieve mosquito bites	1	roots	drink cold infusion to clean blood

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^e)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
					relieve mosquito bites	1	bark	drink cold infusion to clean blood
					stomach-ache	1	leaves	drink cold infusion with <i>Aristolochia cf. consimilis</i>
					stomach-ache	1	roots	drink cold infusion with <i>Aristolochia cf. consimilis</i>
					stomach-ache	1	bark	drink cold infusion with <i>Aristolochia cf. consimilis</i>
					stomach-ache	1	leaves	drink decoction
					stomach-ache	1	root	drink decoction
					stomach-ache	1	bark	drink decoction
					fever	2	leaves	bathe with decoction
Siparunaceae	<i>Siparuna guianensis</i> Aubl. (CK63)	10	febebau (Sa)	7				
					fever	1	leaves	drink decoction
					taangasinkiuwii	2	leaves	bathe with decoction
					healing vagina after delivery	1	leaves	bathe with decoction
					ward of evil	1	leaves	bathe with decoction with <i>Campomanesia aromatica</i> and parts of tail of parrot (papakai labu) and a shell (papamoni)
					fever baby	1	leaves	bathe with decoction with leaves of <i>Banana guianensis</i>
					strength baby	1	leaves	bathe with decoction with leaves of <i>Banana guianensis</i> and <i>Maprounea guianensis</i>
					strength mother after delivery	1	leaves	bathe with decoction with leaves of <i>Banana guianensis</i> and <i>Maprounea guianensis</i>
					strength mother during pregnancy	1	leaves	bathe with decoction with leaves of <i>Vismia guianensis</i> and <i>Campomanesia aromatica</i>
Smilacaceae	<i>Smilax schomburgkiana</i> Kunth	2	agbogomaka (Sa)	2			root	drink decoction with roots of <i>Astrocaryum sciophilum</i> , <i>Attalea maripa</i> and <i>Amananthus blitum</i>
					strength baby during pregnancy	1	root	drink decoction with roots of <i>Asrocaryum sciophilum</i> , <i>Attalea maripa</i> and <i>Amananthus blitum</i>
Solanaceae	<i>Cestrum latifolium</i> Lam. (CK100)	1	bitauwii (Sa)	1	anaemia	1	leaves	boil and eat leaves as vegetable
	<i>Nicotiana tabacum</i> L. (CK116)	2	tabaku (Sa)	2	cold	1	leaves	crush and apply with little water through nose (sniff)
	<i>Solanum leucocarpum</i> Dunal (CK86)	1	aghopau (Sa)	1	body pain	1	leaves	heat leaf in fire and apply compress on body
	<i>Solanum rigosum</i> Dunal (CK88)	1	asoitabaku (Sa)	1	fever	1	leaves	bathe with decoction
					prevent bites sika (<i>tingga penetrans</i>)	1	leaves	bathe with decoction

Supplementary table S1 | Continued

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^s)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
	<i>Solanum</i> sp.	1	womiagbopau (Sa)	1	pimples on body skin	1	leaves	bathe with decoction
	<i>Solanum stramonifolium</i> Jacq.	1	matunga (Sa)	1	fever	1	leaves	bathe with decoction with <i>Lantana camara</i>
Urticaceae	<i>Cecropia peltata</i> L. (CK90)	3	muyepangangui (Sa)	3	cleansing body general	1	leaves	bathe with decoction
					strength baby	1	leaves	bathe with decoction
	<i>Cecropia sciadophylla</i> Mart. (CK89)	2	womipangangui (Sa)	2	cleansing body general	1	leaves	bathe with decoction
	<i>Laportea astuans</i> (L.) Chew (CK42)	1	azo (Sa)	1	taangasinkuiwii cough	1	leaves	bathe with decoction drink decoction
Verbenaceae	<i>Lantana camara</i> L. (CK36)	9	makamaka (Sa)	8	leismania	1	whole plant	apply resin drops on wound
					fever	2	whole plant	bathe with decoction
					body pain	1	whole plant	bathe with decoction
					cleansing vagina after delivery (fresh smell)	1	whole plant	bathe with decoction
					healing vagina after delivery	1	whole plant	bathe with decoction
					refreshment baby	1	whole plant	bathe with decoction
					strength mother after delivery	1	whole plant	bathe with decoction
					prevent cold	1	whole plant	bathe with decoction, add lirtle salt
					pregnant women	1	whole plant	bathe with decoction
	<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson	1	linzopau (Sa)	1	bad dreams	1	whole plant	bathe with decoction
	<i>Stachytarpheta ajaceniensis</i> (Rich.) Vahl (CK55)	6	alatulabu (Sa)	6	pimples on skin baby	1	whole plant	bathe with decoction
					healing navel baby	1	leaves	crush and apply juice droplets on navel
					menstruation pain	1	whole plant	drink decoction

Family	Scientific plant name (voucher no.)	Citation frequency	Vernacular names (language ^a)	# Uses	Health use	# Citations per use	Used part	Preparation, processing and administration methods
					relieve pain on affected area	1	whole plant	wash affected area with decoction
					strengthen child	1	whole plant	bathe with decoction
					taangasinkiuwii	1	whole plant	bathe with decoction with leaves of with <i>Matayba</i> cf. <i>arborescens</i> and <i>Hiraca faginea</i>

^a Languages: Sa = Saramaccan, Sr= Sranan, Du= Dutch.

