

Full Length Research Paper

Medicinal Resources of the Miombo woodlands of Urumwa, Tanzania: Plants and its uses

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A study was done to document different plants and their use for primary health care by communities around the Miombo woodland of Urumwa, Tanzania. Data collection was based on semi-structured interviews and discussion with key stakeholders. G-tests were carried out to seek differences in ethnobotanical knowledge between women and men. 110 plant species were documented to have 74 medicinal uses. Men were found to be ethnobotanically knowledgeable than women. The ethnobotanical knowledge of medicinal plant resources at Urumwa need to be recognized and preserved to ensure future effectiveness of the primary health care system. Due to the global interest in medicinal plants, there is a need to carry out phytochemical and pharmacological studies for most unstudied but potential documented species to validate usage, find new pharmaceuticals, increase confidence among users and contribute to the development of the traditional medicine sector in Tanzania and other areas in Africa within the Miombo ecoregion.

Key words: Medicinal plants, ethnobotany, gender, Urumwa, Tanzania.

INTRODUCTION

Miombo is an informad term used to describe the floristically rich and widespread indigelous woodlands of central, southern and eastern Africa, largely characterized by the caesalpinoid tree genera *Brachystegia*, *Julbernardia* and *Isoberlinia* (White, 1983). Over 75 million people live within the ecoregion, its resources directly supporting their livelihoods. A further 15 million people in towns and cities through the ecoregion also depend on the woodlands for a variety of products (Bradley and McNamara, 1993; Dewees, 1994) including plants for medicinal purpose.

Medicinal plants offer alternative remedies with tremendous opportunities. They not only provide access and affordable medicine to poor people but also generate income and employment for people in the developing countries. In rural communities throughout Africa, medicinal plants constitute a fundamental component of traditional healthcare systems (Garí, 2002), which demonstrates their contribution to the reduction of

excessive mortality and disability due to diseases such as Human Immunodeficiency Virus (HIV)/Acquired Immuno Deficiency Syndrome (AIDS), malaria, tuberculosis, sickle-cell anaemia, diabetes and mental disorders, and reduce poverty by increasing the economic well-being of communities (Elujoba et al., 2005).

The ethnobotany of medicinal plants in the Miombo woodlands of western Tanzania has been poorly documented and there is need to record knowledge before traditional specialists abandon their practices or pass away without imparting their knowledge to a younger generation. Studies such as Ruffo (1990) and Katambo (1999) have documented plants used as medicine and indigenous knowledge of medicinal plants in the Miombo woodland of western Tanzania, but are inadequate to signify the importance of these resources in the wider Miombo context. Documentation of medicinal plants is thus still required especially for the western Miombo woodlands of Tanzania which are at increasing risk of habitat loss through anthropogenic activities (Iddi, 2002; Dallu, 2003), threatening the availability of wild plants. Equally, there is a serious problem of traditional medicinal knowledge disappearance in Tanzania (Mahunnah, 1991). In this paper we present an inventory

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of the locally known medicinal plants of Urumwa indicating ethnobotanical knowledge held by the communities around. The approach has been to document the plants involved, their use in treating diseases, and to compare the knowledge held by the men and women in the area.

METHODOLOGY

The study area

The study was undertaken from April to November, 2004 in six villages around the Miombo woodland of the Urumwa Forest Reserve in Tabora-Uyui District, Tabora Region (4-7°S, 31-34°E). The region forms part of the vast central plateau of the mid-western part of Tanzania (Figure 1a), an area of generally low relief most of which lies between 1,100 and 1,300 m elevation (Acres et al., 1984), where about 61% of the vegetation covers of Tabora Region is dry Zambezian Miombo woodland (White, 1983). The choice of the study area was based on the richness of its Miombo woodlands. The reserve and its surrounding villages (5°08' - 5°14' S, 32°44' - 32°50'E) are about 15 km south of Tabora municipality (Figure 1b) and cover an area of about 13,000 ha. The reserve is bordered by 12 villages collectively with an estimated population of about 22,500 (Mbwambo, 2000). A large proportion (approximately 80%) of Tabora's urban population relies on the reserve for medicinal products. In this study, the six villages most involved in the Joint Forest Management (JFM) programme organized by Tabora-Uyui Forest Department were included: Igombanilo, Isukamahela, Kasisi 'A', Masimba, Mtakuja mashariki and Ujerumani.

Interviews

Semi-structured face-to-face interviews using a mixture of open- and closed-ended questionnaires were conducted with herbalists (that is, traditional healers, medicinal plant sellers and traditional birth attendants), medicinal plant collectors, and knowledgeable households in six villages close to Urumwa Forest Reserve (Table 1), to collect information on local plant names, uses, parts used, and modes of preparation and administration. Furthermore, several informal discussions with respondents and participant observation techniques were also employed, to confirm the survey data and to gather additional information. Approach and entry to villages for data collection was through the village leadership, generally the Chairmen and Executive Secretaries, ensuring smooth running of day to day activities within the study area. Most respondents were generous in sharing their knowledge during the survey however; a few traditional healers refused to disclose their knowledge because they believe that once disclosed it will lose its effectiveness and also reflected the idea of a trade secret in traditional medicine system. Those who refused were not included in the interview and someone else was consulted.

A stratified sampling strategy based on gender in households of the six selected villages was used to select informants that is, herbalists, medicinal plant collectors and household heads. In total, 115 informants (62 male and 53 female) were involved in the survey to explore local knowledge on use of medicinal plants; out of which 60 were herbalists, 6 medicinal plants collectors and 49 household heads.

Data analysis

The list of recorded plants had their vernacular names confirmed

during transect walk survey inside the forest reserve with the help of local plant identifier, who was also a traditional healer. Voucher specimens were also collected, pressed, dried, identified and deposited at Tabora Miombo Woodland Centre Herbarium. Botanical identification of specimens was done by consulting a botanist as well as relevant documents such as Dale and Greenway (1961), Blundell (1987), Hines and Eckman (1993), Mbuya et al. (1994), Ruffo (1990) and Ruffo et al. (2002). G-tests of association were carried out to seek differences in ethnobotanical knowledge of medicinal plants between women and men around Urumwa. Assuming that men and women would mention same number of medicinal plants, the likelihood ratio statistic (G) was calculated as: $G = 2 \times \sum \{[(\text{observed frequency}) \times \ln(\text{observed frequency}/\text{expected frequency})]\}$. Calculated values were corrected for continuity by applying the William's correction factor (Sokal and Rohlf, 1995). P values were calculated using the common method as recommended by Bailey (1995) as follows:

$$P = \frac{(a+b)!(c+d)!(a+c)!(b+d)!}{n!a!b!c!d!}$$

Where: (a+b), (c+d).....+(b+d) = Marginal values from 2 x 2 contingency table

a+b+c+d = n = Total sample size

x!=1. 2. 3. (x-1) = Factorial and 0! = 1

RESULTS

Ethnobotanical knowledge

The ethnobotanical data set was made up of records. Each record was a report from one of the 115 respondents that a particular species was used for a specified medicinal use. In total, 74 medicinal uses (use sub-categories, grouped into 10 use categories) were recognized.

Reported species

A total of 110 medicinal plant species (72% trees, 20% shrubs and 8% herbs) belonging to 37 families in 20 phylogenetic orders were recorded (Tables 2a and 2b). Plant nomenclature followed Lebrun and Stork (1991 – 1997). Out of the reported species, 99 were from inside and 11 from outside Urumwa forest reserve. As with the different use categories, the numbers of records for different species varied greatly (Figure 2), from single records (for 19 species) to 139 records (for *Cassia abbreviata*). For fewer than 40 of the 110 species were 10 or more records gathered, and only 12 species were reported in excess of 20 times, accounting for 46% of the records. Half of the records contributed by the top 15 species, suggesting that these are species particularly well-known by the local communities. In phylogenetic terms, three orders that is, Fabales, Myrtales and Sapindales dominated the records gathered, accounting for more than 60% of the records although containing

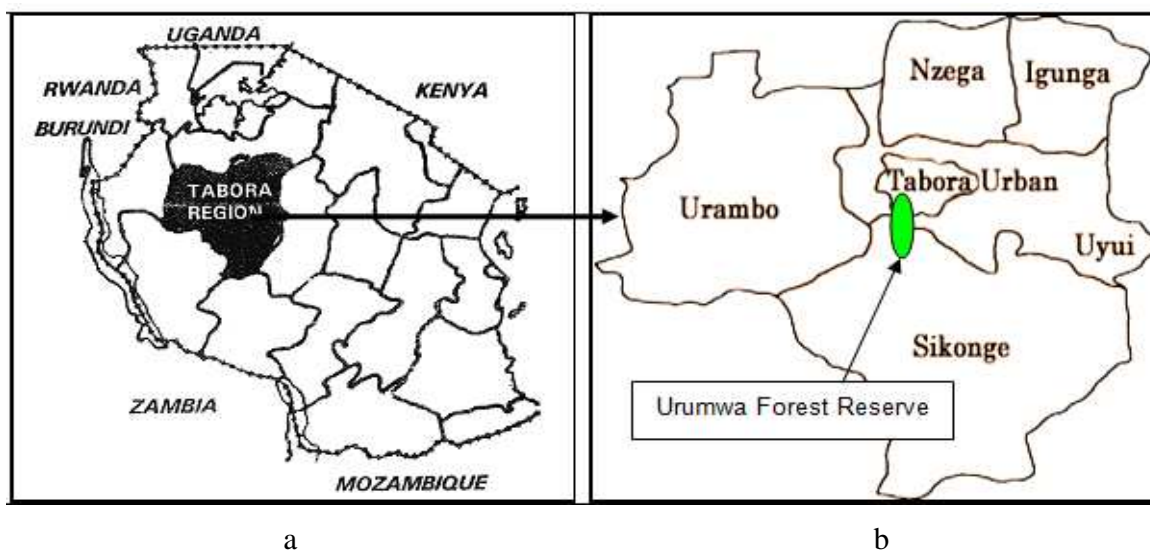


Figure 1a,b. Location of the study area in Tanzania. Source: URT (1998).

Table 1. Sampling scale used during ethnobotanical survey in villages around Urumwa, Tanzania.

Village name	Sampling units												Total
	Traditional healers		Traditional birth attendants		Vendors		Collectors		Households		Others		
	Me	Fe	Me	Fe	Me	Fe	Me	Fe	Me	Fe	Me	Fe	
Masimba	3	2	-	7	8	-	2	-	3	2	2	-	29
Igombanilo	2	1	-	5	-	-	1	-	4	1	2	-	16
Mtakuja mashariki	1	-	-	4	-	-	1	-	3	2	1	1	13
Isukamahela	2	1	-	5	-	-	2	-	5	4	1	1	21
Ujerumani	6	2	-	3	-	-	-	-	3	3	1	1	19
Kasisi 'A'	3	1	-	4	-	-	-	-	4	3	2	-	17
Total	17	7	-	28	8	-	6	-	22	15	9	3	115

Note: Me, represents 'Male' and Fe, represents 'Female'.

only 50 of the 110 species.

Reported usage

The numbers of records assembled for use categories and sub-categories varied widely. At category level, numbers ranged from 33 to 318; while at sub-category level numbers ranged from 1 to 134 (Table 3; Figure 3). For most sub-categories the questionnaire responses generated relatively little information (<10 records) – implying that much of the community's traditional medicinal plant use information is sparsely distributed, although quite diverse. However, half of the records referred to the top 8 use sub-categories, and in all but two categories (fevers and skin disorders) at least 30

records were gathered for at least one use sub-category, suggesting a number of medicinal plant usages were common place. The familiarity of many local people with treatments for various gastro-intestinal and urino-genital complaints explains the well-reported sub-categories and possibly well-established treatment procedures, although other sub-categories were more rarely mentioned.

Species x village

In the context of the individual village, species of particular significance were taken as those ranked up to "10=" (Table 4). Because of rank equalities, 12 out of 30 top-ranked species satisfy this criterion for Mtakuja Mashariki and Ujerumani, and 11 for Isukamahela. There

Table 2a. Combined list of medicinal plants recorded from Urumwa Forest Reserve, Tabora region, Tanzania.

Botanical name	Vernacular name(s)	Family (Order)	Habit	Part(s) used	Voucher	Disease/Complication cured	Application method (s)
<i>Abrus precatorius L.</i>	Kantyentye	Papilionoideae (Fabales)	Herb	Roots	Augustino 108	Stomach ache, aphrodisiac	Oral
<i>Acacia gerrardii Benth.</i>	Olng'ong'wenyi	Mimosoideae (Fabales)	Tree	Bark	Augustino 211	Haemorrhoids	Oral
<i>Acacia mellifera (Vahl) Benth.</i>	Mulugala	Mimosoideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 150	Stomach ache, menstrual disorder, diarrhoea, anaemia	Oral
<i>Acacia nigrescens Oliv.</i>	Kagowole	Mimosoideae (Fabales)	Tree	Roots	Augustino 106	Infertility, foetus disposition, stomach ache, lucky	Oral, Bath
<i>Acacia polyacantha Willd.</i>	Livindwe	Mimosoideae (Fabales)	Tree	Roots, bark	Augustino 212	Convulsion, chronic malaria	Nasal, Oral
<i>Acacia senegal (L.) Willd.</i>	Mugwata	Mimosoideae (Fabales)	Tree	Roots	Augustino 134	Abscess	Massage
<i>Acalypha fruticosa Forssk.</i>	Mugulumwanguku	Euphorbiaceae (Malpighiales)	Herb	Roots	Augustino 213	Hernia	Oral
<i>Adansonia digitata L.</i>	Mbuyu	Malvaceae (Malvales)	Tree	Bark	Augustino 115	General body weakness	Oral, bath
<i>Azelia quanzensis Pers.</i>	Mkola	Caesalpinioideae (Fabales)	Tree	Roots, bark	Augustino 118	Gonorrhoea, syphilis, aphrodisiac, stroke, fever, abdominal swelling, body swelling	Oral, massage
<i>Albizia harveyi Fourn.</i>	Mupogolo	Mimosoideae (Fabales)	Tree	Roots, leaves	Augustino 168	Energy giver, convulsion, hypertension, intestinal worms, stomach ache, chest pains, wounds, abscess,	Oral, nasal, massage
<i>Antidesma venosum Tul.</i>	Musekela	Euphorbiaceae (Malpighiales)	Tree	Roots, leaves	Augustino 174	Stomach ache, snakebite, lucky	Oral, massage, bath
<i>Berchemia discolor (Klotzsch) Hemsl.</i>	Mukuni	Rhamnaceae (Rosales)	Tree	Roots, leaves	Augustino 146	Snakebite	Massage

Table 2a. Contd.

<i>Bidens pilosa L.</i>	Ndasa	Asteraceae (Asterales)	Herb	Leaves	Augustino 202	Fever in infants	Oral, bath
<i>Boscia salicifolia Oliv.</i>	Muguluka	Capparidaceae (Brassicales)	Tree	Roots, bark	Augustino 132	Scrotal masses, headache, backache, stroke, rheumatism	Oral, massage
<i>Brachystegia boehmii Taub.</i>	Muyombo	Caesalpinioideae (Fabales)	Tree	Roots, leaves	Augustino 192	Snakebite	Oral, massage
<i>Brachystegia spiciformis Benth.</i>	Mutundu	Caesalpinioideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 186	Snakebite, cough	Oral, massage, chew
<i>Bridelia duvigneaudii J. Léonard</i>	Muvuzivuzi	Euphorbiaceae (Malpighiales)	Shrub	Roots, leaves	Augustino 191	Intestinal worms, Love	Oral, bath, massage
<i>Burkea africana Hook.</i>	Mukarati	Caesalpinioideae (Fabales)	Tree	Bark	Augustino 214	Headache	Oral, massage
<i>Multidentia crassa (Hiern) Bridson and Verdc. var crassa</i>	Mukumbakumba, Muyogoyogo	Rubiaceae (Gentianales)	Tree	Roots	Augustino 145	Convulsion, infertility, stomach ache	Oral
<i>Maerua kirkii (Oliv.) F.White</i>	Mugakamo	Capparidaceae (Brassicales)	Shrub	Roots, bark	Augustino 215	Rituals	Bath, external
<i>Cassia abbreviata Oliv.</i>	Mulundalunda, Mmulimuli, Munzoka	Caesalpinioideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 152, ITM 3708	Gonorrhoea, hernia, syphilis, stomach ache, bilharzia, haemorrhoids, fever, jaundice, diarrhoea, convulsion, abortion, earache, epilepsy, aphrodisiac, vomiting, cough, infertility	Oral, chew, anal, nasal
<i>Cassia obtusifolia L.</i>	Muzegazega	Caesalpinioideae (Fabales)	Tree	Roots	Augustino 193	Jaundice	Oral
<i>Cassia occidentalis L.</i>	Muhungajini, Muwangajini, Njegenjeje	Caesalpinioideae (Fabales)	Tree	Roots	Augustino 137	Stomach ache, fever	Oral
<i>Cassia singueana Delile</i>	Musambisambi	Caesalpinioideae (Fabales)	Tree	Roots, LEAVES	Augustino 171	Epilepsy, convulsion, limbs ache	Oral, nasal, massage

Table 2a. Contd.

<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Mupogole, Ng'ochangoko, Ng'wiwansungu	Rubiaceae (Gentianales)	Shrub	Roots, bark	Augustino 167	Infertility, gonorrhoea, hernia, stomach ache, convulsion, abortion	Oral
<i>Cissampelos pareira</i> L.	Nkuluwanti	Menispermaceae (Ranunculales)	Shrub	Roots	Augustino 204	Malaria, hernia, stomach ache, gonorrhoea, fever	Oral
<i>Cissus</i> <i>quadrangularis</i> Chiov.	Mutandamwaka, Vulavwansuwi	Vitaceae (Rosids)	Shrub	Roots	Augustino 183	Hernia, rectal prolapse	Oral, anal
<i>Combretum adenogonium</i> A.Rich.	Muluzyaminzi	Combretaceae (Myrtales)	Tree	Roots, leaves	Augustino 155	Malaria, wounds, trachoma	Oral, massage
<i>Combretum molle</i> G.Don	Mulama	Combretaceae (Myrtales)	Tree	Roots, leaves	Augustino 148	Earache, wounds, love, rituals	Oral, massage, bath
<i>Combretum obovatum</i> F.Hoffm.	Vugoweko	Combretaceae (Myrtales)	Shrub	Roots	Augustino 210	Antiabortion, abscess, infertility, love, gonorrhoea, snakebite	Oral, massage, bath
<i>Combretum zeyheri</i> Sond.	Musana	Combretaceae (Myrtales)	Tree	Roots, leaves, Bark	Augustino 172, ITM 3706	Rectal prolapse, cough, diarrhoea, anaemia, abdominal ulcers, anal eczema, body pains, stomach ache, wounds, dysentery, infertility, snakebite, haemorrhoids, rituals	Oral, chew, anal, massage, external
<i>Commiphora africana</i> (A.Rich.) Engl.	Muntonto, Esilalei	Burseraceae (Sapindales)	Tree	Roots, bark	Augustino 161	Infertility, diabetes, trachoma, snakebite	Oral, massage
<i>Crossopteryx febrifuga</i> (G.Don) Benth.	Musanzambeke	Rubiaceae (Gentianales)	Tree	Roots, bark	Augustino 173	Diarrhoea, convulsion, sore throats, cough, dysentery, hernia, hypertension, stomach ache	Oral, chew
<i>Dalbergia melanoxylo</i> Guill. and Perr.	Mugembe	Papilionoideae (Fabales)	Tree	Roots, twigs	Augustino 129	Gonorrhoea, bilharzia, wounds, abscess, skin rashes	Oral, massage
<i>Dalbergia nitidula</i> Bak.	Kafinulambasa	Papilionoideae (Fabales)	Tree	Roots, bark	Augustino 105, ITM 3705	Anaemia, toothache, diabetes, gonorrhoea, bilharzia, diarrhoea	Oral
<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	Mutundulu	Mimosoideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 187	Infertility, wounds, epilepsy, rituals, menstrual disorder, rectal prolapse, stomach ache, diarrhoea, dizziness	Oral, anal, bath, external

Table 2a. Contd.

<i>Diospyros fischeri</i> Gürke	Mfubata	Ebenaceae (Ericales)	Shrub	Roots, leaves	Augustino 117	Placental removal after delivery, Stomach ache, earache, snakebite, wounds	Oral, massage, external
<i>Ekebergia benguelensis</i> .DC.	Mutuzya	Meliaceae (Sapindales)	Tree	Roots, leaves, Bark	Augustino 189	Convulsion, mental disorders, low and hypertension, stomach ache, love/lucky	Oral, bath, massage
<i>Entada abyssinica</i> A.Rich.	Mufutwambula, Ngemwambula	Mimosoideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 128	Tonsillitis, gonorrhoea, syphilis, hypertension, anaemia, snakebite, infertility, tuberculosis, sore throats	Oral, chew, massage
<i>Erythrina abyssinica</i> DC.	Mukalalwanhuba	Papilionoideae (Fabales)	Tree	Bark, leaves	Augustino 138	Jaundice, snakebite	Oral, massage
<i>Erythroxylum emarginatum</i> Thonn.	Ndaja	Erythroxylaceae (Malpighiales)	Herb	Roots, leaves	Augustino 201	Tumours, rituals	Massage, bath
<i>Euclea divinorum</i> Hiern.	Mdaa	Ebenaceae (Ericales)	Shrub	Roots, leaves	Augustino 116	Infertility, wounds, snakebite	Oral, massage
<i>Euphorbia grantii</i> Oliv.	Mudulansongo	Euphorbiaceae (Malpighiales)	Shrub	Roots, Exudate	Augustino 126	Epilepsy, toothache, snakebite	Nasal, massage, external
<i>Euphorbia hirta</i> L.	Lonzwe, Vakikulu	Euphorbiaceae (Malpighiales)	Herb	Roots, leaves, Bark	Augustino 112	Hernia, hypertension, convulsion, epilepsy, menstrual disorders	Oral, nasal
<i>Euphorbia tirucalli</i> L.	Munyala, Myaa	Euphorbiaceae (Malpighiales)	Shrub	Leaves, Exudate	Augustino 163	Chicken typhoid, finger swelling	Oral, massage
<i>Flacourtia indica</i> (Burm.f.) Merr.	Musingila, Muchongoma, Mubuguswa	Salicaceae (Malpighiales)	Tree	Roots, leaves	Augustino 176	Infertility, stomach ache, cough, hernia, snakebite	Oral, chew, massage
<i>Friesodielsia obovata</i> (Benth.) Verdc.	Musalasi, Msasi	Annonaceae (Magnoliales)	Tree	Roots	Augustino 170	Infertility, stomach ache, anaemia, placenta expulsion, snakebite	Oral, massage
<i>Gardenia ternifolia</i> Schum. and Thonn.	Kilindilamugunda	Rubiaceae (Gentianales)	Shrub	Roots	Augustino 110	Hypertension, aphrodisiac	Oral

Table 2a. Contd.

<i>Grewia bicolor</i> Juss.	Mukoma	Malvaceae (Malvales)	Shrub	Roots	Augustino 140	Infertility, anaemia	Oral
<i>Grewia conocarpoides</i> Burret	Mudati	Malvaceae (Malvales)	Shrub	Roots	Augustino 125	Infertility	Oral
<i>Hymenocardia acida</i> Tul.	Mupala	Hymenocardiaceae (Malpighiales)	Tree	Roots, leaves	Augustino 166	Infertility, epilepsy, rectal prolapse, hernia, stomach ache	Oral, anal, nasal
<i>Indigofera swaziensis</i> Bolus	Igangula	Papilionoideae (Fabales)	Tree	Exudate	Augustino 102	Spleen enlargement	Oral, external
<i>Isoberlinia angolensis</i> (Benth.) Hoyle and Brenan	Muva	Caesalpinioideae (Fabales)	Tree	Bark	Augustino 190	Cough, wounds, snakebite	Chew, massage
<i>Jatropha curcus</i> L.	Mubono	Euphorbiaceae (Malpighiales)	Shrub	Roots, exudate	Augustino 124	Anal eczema	Oral, anal
<i>Jubernardia globiflora</i> (Benth.) Troupin	Muba, Muwa	Caesalpinioideae (Fabales)	Tree	Bark	Augustino 216	Cough, snakebite	Chew, massage
<i>Justicia salvioides</i> Milne- Redh.	Muluguti	Acanthaceae (Lamiales)	Shrub	Roots	Augustino 151	Infertility	Oral
<i>Kigelia africana</i> (Lam.) Benth.	Mudungwa, Mwicha, Mulegea	Bignoniaceae (Lamiales)	Tree	Roots, bark, Fruits	Augustino 127, ITM 3703	Anaemia, convulsion, hypertension, rituals	Oral, external
<i>Lannea schimperi</i> (A.Rich.) Engl.	Mugumbu	Anacardiaceae (Sapindales)	Tree	Roots, leaves, Bark	Augustino 133	Anaemia, tumours, cough, mental disorders, stomach ache, snakebite, rituals	Oral, chew, massage, external
<i>Lonchocarpus bussei</i> Harms	Mubale	Papilionoideae (Fabales)	Tree	Roots, leaves	Augustino 217	Rituals	External
<i>Mangifera indica</i> L.	Mwembe	Anacardiaceae (Sapindales)	Tree	Bark	Augustino 197	Anal eczema, diarrhoea, dysentery	Oral, anal
<i>Margaritaria discoidea</i> (Baill.) G.L. Webster	Kasenga	Euphorbiaceae (Malpighiales)	Tree	Roots	Augustino 109	Infertility	Oral
<i>Markhamia obtusifolia</i> (Bak.) Sprague	Mubapa	Bignoniaceae (Lamiales)	Tree	Roots	Augustino 123	Infertility, aphrodisiac, love, lucky	Oral, bath, massage

Table 2a. Contd.

<i>Maytenus senegalensis</i> (Lam.) Exell	Mwezuya, Lweja	Celastraceae (Celastrales)	Tree	Roots, bark	Augustino 101	Infertility, stomach ache, fever love/lucky	Oral, bath, massage
<i>Mundulea sericea</i> (Willd.) A.Chev.	Mutandala	Papilionoideae (Fabales)	Shrub	Roots, bark	Augustino 182, ITM 3710	Antiabortion, wounds, aphrodisiac, hernia, bilharzia, epilepsy, stomach ache	Oral, nasal, massage
<i>Oldfieldia dactylophylla</i> (Oliv.) J. Léonard	Muliwanfwengi	Euphorbiaceae (Malpighiales)		Roots	Augustino 149	Infertility, aphrodisiac, hernia, stomach ache	Oral
<i>Ormocarpum</i> <i>trachycarpum</i> (Taub.) Harms	Mukondwamhuli	Papilionoideae (Fabales)	Shrub	Roots, leaves	Augustino 143	Pneumonia, snakebite	Oral, massage
<i>Ozoroa insignis</i> Delile	Mwembepori, Mukalakala	Anacardiaceae (Sapindales)	Tree	Roots, leaves, Bark	Augustino 198, ITM 3709	Diarrhoea, haemorrhoids, anal eczema, epilepsy, gonorrhoea, antiabortion, stomach ache	Oral, nasal, Anal
<i>Parinari curatellifolia</i> Benth.	Mumbula	Chrysobalanaceae (Malpighiales)	Tree	Roots	Augustino 156	Infertility	Oral
<i>Pennisetum purpureum</i> Schumach.	Isumbu	Poaceae (Poales)	Herb	Stem	Augustino 104	Infertility	Oral
<i>Pericopsis angolensis</i> (Bak.) van Meeuwen	Mubanga, Muvunga	Papilionoideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 122	Stroke, headache, dizziness, cough, fireburn, limbs ache, convulsion	Oral, massage
<i>Phyllanthus engleri</i> Pax	Mugogondi	Euphorbiaceae (Malpighiales)	Shrub	Roots, leaves	Augustino 130	Epilepsy, hernia	Nasal, oral
<i>Phyllanthus reticulatus</i> Poir.	Mubinzandimi	Euphorbiaceae (Malpighiales)	Shrub	Leaves	Augustino 218	Hookworms	Oral
<i>Physalis peruviana</i> L.	Sinkini	Solanaceae (Solanales)	Herb	Roots	Augustino 209	Intestinal worms	Oral
<i>Piliostigma thonningii</i> (Schumach.) Milne-Redh.	Mutindwambogo	Caesalpiniodeae (Fabales)	Tree	Roots, leaves, Bark	Augustino 184	Convulsion, epilepsy, snakebite	Oral, nasal, massage

Table 2a. Contd.

<i>Pithecellobium dulce</i> (Roxb.) Benth.	Ilamata	Mimosoideae (Fabales)	Tree	Roots	Augustino 103	Snakebite	Massage
<i>Premna senensis</i> Klotzsch	Mununhwanhala	Lamiaceae (Lamiales)		Roots, leaves	Augustino 162	Epilepsy, body pains/weakness, stomach ache, infertility, hernia, aphrodisiac, abscess, rituals	Oral, nasal, massage, bath, external
<i>Pseudolachnostylis</i> <i>maprouneifolia</i> Pax	Mutungulu	Euphorbiaceae (Malpighiales)	Shrub	Roots, leaves, Bark	Augustino 188	Stabbing sensations, diarrhoea, snakebite	Oral, massage
<i>Pterocarpus angolensis</i> DC.	Muninga	Papilionoideae (Fabales)	Tree	Roots, bark, Leaves, fruits	Augustino 160	Anaemia, cough, diarrhoea, snakebite	Oral, chew, massage
<i>Pterocarpus tinctorius</i> Welw.	Mukurungu,	Papilionoideae (Fabales)	Tree	Roots, leaves, Bark	Augustino 147, ITM 3712	Anaemia, diarrhoea, wounds, antiabortion, stomach ache, eyes ache, snakebite	Oral, massage
<i>Ricinus communis</i> L.	Mbarika, Mkale	Euphorbiaceae (Malpighiales)	Tree	Roots, leaves	Augustino 114	Labour pains, stroke, placenta expulsion	Oral, massage
<i>Rothmannia engleriana</i> (K.Schum.) Keay	Mukondokondo	Rubiaceae (Gentianales)	Tree	Roots, leaves, bark	Augustino 142	Infertility, gonorrhoea, antiabortion, placenta expulsion	Oral
<i>Schrebera trichoclada</i> Welw.	Muputika	Oleaceae (Lamiales)	Tree	roots, leaves, bark	Augustino 169	Headache, cough, wounds, flu, stabbing sensations, snakebite	Oral, chew, nasal, massage
<i>Sclerocarya birrea</i> subsp. <i>caffra</i> (Sond.) Kokwaro	Mung'ongo	Anacardiaceae (Sapindales)	Tree	Leaves, bark	Augustino 159	Anal eczema, cough	Anal, oral, chew
<i>Securidaca</i> <i>longipedunculata</i> Fres.	Mteyu, Mteyo, Nengonengo	Polygalaceae (Fabales)		Roots, leaves	Augustino 120	Epilepsy, headache infertility, toothache, snakebite, placenta expulsion, stomach ache	Oral, chew, nasal
<i>Solanum incanum</i> L.	Ntulantu, Matula, Iditula	Solanaceae (Solanales)	Shrub	Roots, fruits	Augustino 205	Tooth decay, aphrodisiac, hernia, intestinal worms, pelvic dilation, stomach ache, rituals	Oral, bath
<i>Steganotaenia araliacea</i> Hochst.	Munyongampembe	Apiaceae (Apiales)		Roots, leaves, Bark	Augustino 165	Snakebite, rituals	Massage, external
<i>Sterculia africana</i> (Lour.) Fiori	Muhozya	Malvaceae (Malvales)	Tree	Roots, bark	Augustino 136	Pain relief, anaemia, mental disorder, infertility, convulsion, lucky, rituals	Oral, bath, external

Table 2a. Contd.

<i>Strophanthus eminii</i> Asch. and Pax	Musungululu	Apocynaceae (Gentianales)		Roots	Augustino 180	Epilepsy	Oral, nasal
<i>Strychnos innocua</i> Delle	Mumundu	Strychnaceae (Gentianales)	Tree	Roots	Augustino 157	Aphrodisiac, infertility	Oral
<i>Strychnos potatorum</i> L.f.	Mugwegwe, Mupandepande	Strychnaceae (Gentianales)	Tree	Roots, leaves	Augustino 135	Stomach ache, toothache, hernia, cough, malaria, gonorrhoea, syphilis, bilharzia, snakebite	Oral, chew, massage
<i>Strychnos pungens</i> Soler.	Mukome	Strychnaceae (Gentianales)	Tree	Roots, leaves, fruits	Augustino 141	Snakebite, convulsion, heart pains	Oral, massage
<i>Strychnos spinosa</i> Lam.	Mwage	Strychnaceae (Gentianales)	Tree	Roots, leaves, bark	Augustino 195, ITM 3704	Infertility, tumours, convulsion, vomiting, intestinal worms, stabbing sensations, gonorrhoea, syphilis, cough, stomach ache, snakebite	Oral, chew, massage
<i>Syzygium cumini</i> (L.) Skeels	Mudisi, Mzambarau	Myrtaceae (Myrtales)	Tree	Bark, seeds	Augustino 200	Bilharzia, diabetes	Oral, chew
<i>Thespesia garckeana</i> F. Hoffm.	Mutobo	Malvaceae (Malvales)	Tree	Roots	Augustino 185	Labour progression	<i>Thespesia garckeana</i> F. Hoffm.
<i>Tapiphyllum cinerascens</i> (Hiern) Robyns	Kambolambola	Rubiaceae (Gentianales)	Herb	Roots	Augustino 107	Infertility	Oral
<i>Terminalia sericea</i> DC.	Muzima, Njimya	Combretaceae (Myrtales)	Tree	Roots, leaves, bark	Augustino 194	Haemorrhoids, diarrhoea, anal eczema, stabbing sensations, rectal prolapse, stomach ache, cough, measles, limbs ache, rituals	Oral, chew, anal, massage
<i>Turraea fischeri</i> Gürke	Ningiwe, Muningiwe	Meliaceae (Sapindales)	Tree	Roots	Augustino 203	Stomach ache, infertility, headache	Oral, massage
<i>Vepris glomerata</i> (F. Hoffm.) Engl.	Mulungusigiti	Rutaceae (Sapindales)	Tree	Roots, leaves	Augustino 154, ITM 3711	Scrotal masses, infertility, aphrodisiac, hernia, diabetes, constipation, snakebite, rituals	Oral, massage, external

Table 2a. Contd.

<i>Vitex mombassae</i> Vatke	Mutalali, Musungwi	Lamiaceae (Lamiales)	Tree	Roots, leaves	Augustino 181	Infertility, body rashes, stomach ache, diabetes, diarrhoea, snakebite	Oral, massage
<i>Xeroderris stuhlmannii</i> (Taub.) Mendonça and Sousa	Munyenyene	Papilionoideae (Fabales)	Tree	Roots, leaves	Augustino 164	Hookworms, snakebite	Oral, massage
<i>Ximenia caffra</i> Sond.	Munembwa, Mutundwa	Olacaceae (Santalales)	Tree	Roots, leaves	Augustino 158	Stomach ache, gonorrhoea, anaemia, mental disorder, abdominal ulcers, tumours, abscess, hernia, intestinal worms, snakebite	Oral, nasal, massage
<i>Xylopia odoratissima</i> Oliv.	Mushenene	Annonaceae (Magnoliales)	Tree	Roots, leaves	Augustino 175, ITM 3707	Infertility, stomach ache, diabetes, abdominal ulcers, fever, epilepsy	Oral, nasal
<i>Zanha africana</i> (Radlk.) Exell	Mukalya, Ng'watya, Mdaula	Sapindaceae (Sapindales)	Tree	Roots, bark	Augustino 139	Convulsion, flu, headache, stomach ache, elephantiasis, aphrodisiac, epilepsy	Oral, Nasal, Massage
<i>Zanthoxylum chalybeum</i> Engl.	Mulungulungu, Munungu, Oluisuki	Rutaceae (Sapindales)	Tree	Roots, leaves, bark	Augustino 153	Hernia, headache, toothache, body swelling, stomach ache, limb swelling, malaria, asthma, chest pains, infertility, heart pains, abscess	Oral, nasal, massage
<i>Ziziphus mucronata</i> Willd.	Mugugunu	Rhamnaceae (Rosales)	Tree	Roots, bark	Augustino 131	Foetus disposition, aphrodisiac, stomach ache, chest pains, hypertension	Oral

Table 2b. List of other utilized medicinal plants found outside* Urumwa Forest Reserve, Tabora Region, Tanzania.

Botanical name	Vernacular name	Family (Order)	Habit	Part(s) used	Voucher	Disease/Complication cured	Application method(s)
<i>Acacia nilotica</i> (L.) Delile	Olkiroliti	Mimosoideae (Fabales)	Tree	Bark	Augustino 207	Stomach ache, Typhoid fever, Diabetes, Gonorrhoea, Syphilis, Anaemia	Oral
<i>Aloe vera</i> (L.) Burm.f.	Lugaka	Asphodelaceae (Asparagales)	Herb	Leaves, Roots	Augustino 113	Intestinal worms, Constipation, Stomach ache, Aphrodisiac, Impotency, Spleen enlargement	Oral

Table 2b. Contd.

<i>Annona senegalensis</i> Pers.	Mukonola, Mutopetope	Annonaceae (Magnoliales)	Tree	Roots	Augustino 144	Stomach ache, labour progression	Oral
<i>Azadirachta indica</i> A.Juss.	Mwarobaini	Meliaceae (Sapindales)	Tree	Roots, Leaves, Bark	Augustino 196	Stomach ache, fever, malaria, hernia, general body weakness	Oral
<i>Balanites aegyptiaca</i> (L.) Delile	Olng'oswai	Zygophyllaceae (Eurosids I)	Tree	Roots	Augustino 208	Typhoid fever, MENSTRUAL DISORDERS	Oral
<i>Cajanus cajan</i> (L.) Millsp.	Mubaazi	Papilionoideae (Fabales)	Shrub	Roots, Leaves, Seeds	Augustino 121	Placenta expulsion, stomach ache, antiabortion, infertility, foetus disposition, labour progression	Oral
<i>Carica papaya</i> L.	Limbabayu, Mpapai	Caricaceae (Brassicales)	Tree	Roots, Bark	Augustino 111	Hookworms, typhoid in chicken	Oral
<i>Psidium guajava</i> L.	Mpera	Myrtaceae (Myrtales)	Tree	Roots, Leaves, Bark	Augustino 119	Dysentery, malaria, diarrhoea	Oral
<i>Tamarindus indica</i> L.	Musisi, Nshishi	Caesalpiniodeae (Fabales)	Tree	Leaves, Bark	Augustino 177	Mental disorder, malaria, vomiting, diarrhoea, stomach ache, wounds, dysentery, snakebite	Oral, massage
<i>Terminalia brownii</i> Fries	Olbukoi	Combretaceae (Myrtales)	Tree	Bark	Augustino 206	Hypertension	Oral
<i>Walburgia salutaris</i> (Bertol.f.) Chiov.	Musokonoi	Canellaceae (Canellales)	Tree	Bark, Roots	Augustino 178	Bilharzia, gonorrhoea, syphilis, hernia, cough, asthma	Oral, chew, nasal

*Obtained from other places mainly Sikonge, Arusha and in farms around homesteads.

is considerable consistency among the villages in the top-ranked species, and the significance of *C. abbreviata* and *Combretum zeyheri* is clear. Seven species are top-ranked in three or more of the six villages: *Cassia abbreviata*, *Combretum zeyheri*, *Ekebergia benguelensis*, *Kigelia africana*,

Securidaca longipedunculata, *Terminalia sericea*, *Xylopi odoratissima*. Four others that is, *Entada africana*, *Friesodielsia obovata*, *Pterocarpus angolensis* and *Strychnos spinosa* were found to be used in all the villages and were each top-ranked, apart from *Friesodielsia obovata* which

was top-ranked only for Masimba. This suggests ecologically similar, perhaps overlapping, areas are exploited by the villages for medicinal plants. There is some indication that different villages use different areas in the absence of any records for *Walburgia salutaris* for four villages, despite top-

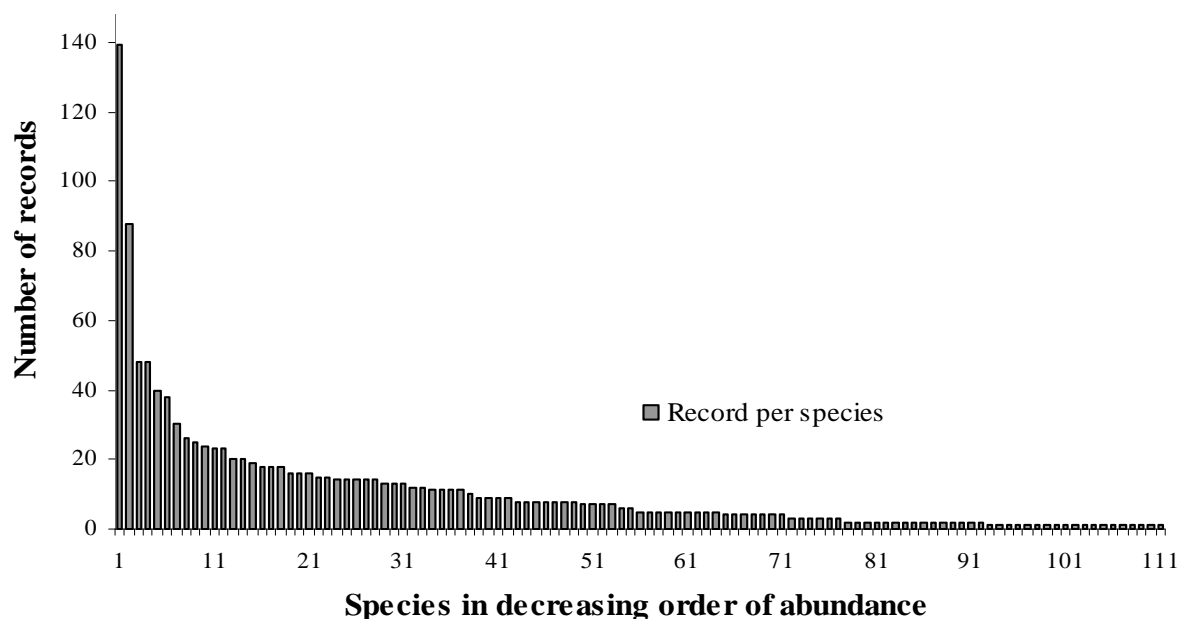


Figure 2. Distribution of records against species listed from communities around Urumwa Forest Reserve, Tanzania. The first 15 species are *Cassia abbreviata*, *Combretum zeyheri*, *Ekebergia benguelensis*, *Terminalia sericea*, *Xylopia longipetala*, *Kigelia africana*, *Securidaca longepedunculata*, *Ozoroa insignis*, *Friesodielsia obovata*, *Pterocarpus angolensis*, *Entada abyssinica*, *Strychnos spinosa*, *Schrebera trichoclada*, *Vepris glomerata* and *Cajanus cajan*.

Table 3. Variation in numbers of records among medicinal plant use categories and sub-categories reported at Urumwa Forest Reserve, Tanzania.

Categories*	Numbers of sub-categories represented by:				Row totals
	>30 records	21-30 records	11-20 records	1-10 records	
Gastro-intestinal conditions	3	0	3	5	11
Urino-genital conditions	2	3	1	7	13
Pains and inflammation	1	1	1	14	17
Central nervous system	1	2	0	1	4
Other human diseases	1	0	2	3	6
Rituals/fortune	1	1	1	0	3
Fevers	0	1	1	2	4
Paediatric conditions	1	0	0	3	4
Respiratory conditions	1	0	0	7	8
Skin disorders	0	0	2	2	4
Column totals	11	8	11	44	74

* Use categories and sub-categories adopted and modified from Hamisy et al. (2000) and Ruffo (1990), respectively.

rankings in the remaining two villages (Kasisi 'A' and Masimba).

Species x gender

The findings showed that men reported significantly higher numbers of species (Table 5) than women (G_{adj}

= 8.640; $p < 0.01$). When the extent of reporting for the different species is considered, however, a number of marked differences are apparent. A few species were reported 10 times or more by both women and men. As the respondent ratio was 53:62 (women: men) = 0.85, for the well-reported species, preferential reporting by women e.g. *Cajanus cajan*, *C. zeyheri*, *X. odoratissima* (Table 6).

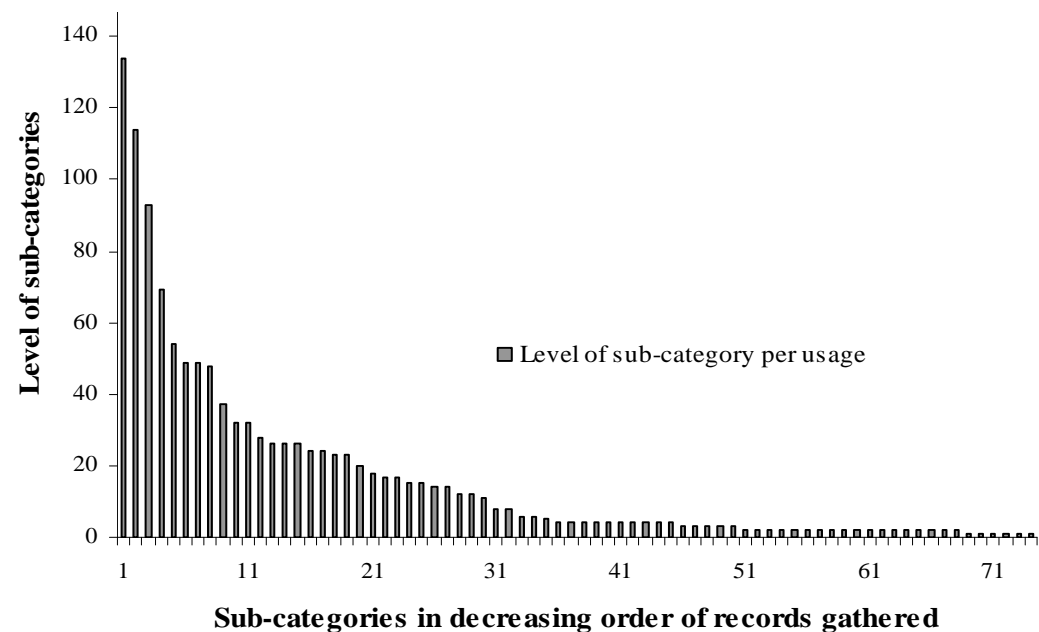


Figure 3. Distribution of sub-categories level against use sub-categories of plants from communities around Urumwa Forest Reserve, Tanzania. The first 8 use sub-categories (categories in parentheses) are: infertility (urino-genital), Stomach ache (gastro-intestinal), diarrhoea (gastro-intestinal), anaemia (other human diseases), snakebite (pains/inflammation), hernia (gastro-intestinal), gonorrhoea (urino-genital), and convulsion (central nervous system).

Table 4. Top-ranked species based on combined records per species across use categories and gender at Urumwa.

Species/ (Number of records)	Masimba	Ujerumani	Igombanilo	Kasisi 'A'	Mtakuja Mashariki	Isukamahela
	(393)	(193)	(171)	(163)	(145)	(133)
<i>Cassia abbreviata</i>	1 (49)	1 (20)	2 (15)	1 (21)	1 (18)	1 (16)
<i>Combretum zeyheri</i>	2 (24)	2 (12)	3 (12)	2 (11)	2 (14)	2 (15)
<i>Ekebergia benguelensis</i>	5 (13)	10 (5)	1 (16)	4 (6)	8 (4)	6 (4)
<i>Xylopiya odoratissima</i>	6 (11)	4 (8)	5 (5)	9 (5)	8 (4)	3 (7)
<i>Terminalia sericea</i>	3 (20)	6 (6)	5 (5)	Rank <10	3 (9)	6 (4)
<i>Kigelia africana</i>	4 (16)	4 (8)	4 (8)	No report	Rank <10	6 (4)
<i>Securidaca longipedunculata</i>	Rank <10	3 (9)	5 (5)	Rank <10	8 (4)	Rank <10

Table 4. Contd.

<i>Ozoroa insignis</i>	6 (11)	6 (6)	Rank <10	Rank <10	No report	Rank <10
<i>Warburgia salutaris</i>	9 (9)	No report	No report	3 (7)	No report	No report
<i>Entada abyssinica</i>	Rank <10	10 (5)	Rank <10	4 (6)	Rank <10	Rank <10
<i>Pterocarpus angolensis</i>	Rank <10	10 (5)	Rank <10	9 (5)	Rank <10	Rank <10
<i>Premna senensis</i>	Rank <10	Rank <10	No report	4 (6)	No report	6 (4)
<i>Strychnos spinosa</i>	Rank <10	Rank <10	Rank <10	Rank <10	8 (4)	4 (5)
<i>Friesodielsia obovata</i>	8 (10)	Rank <10	Rank <10	Rank <10	Rank <10	Rank <10
<i>Zanthoxylum chalybeum</i>	9 (9)	Rank <10	No report	No report	Rank <10	Rank <10
<i>Zanha africana</i>	Rank <10	6 (6)	Rank <10	Rank <10	Rank <10	No report
<i>Dalbergia melanoxylon</i>	Rank <10	6 (6)	Rank <10	No report	No report	No report
<i>Vepris glomerata</i>	Rank <10	Rank <10	5 (5)	Rank <10	Rank <10	No report
<i>Schrebera trichoclada</i>	Rank <10	No report	5 (5)	Rank <10	Rank <10	Rank <10
<i>Erythrina abyssinica</i>	Rank <10	No report	5 (5)	No report	Rank <10	No report
<i>Pterocarpus tinctorius</i>	Rank <10	Rank <10	No report	4 (6)	Rank <10	No report
<i>Strychnos potatorum</i>	No report	Rank <10	Rank <10	4 (6)	Rank <10	No report
<i>Tamarindus indica</i>	Rank <10	Rank <10	Rank <10	Rank <10	4 (6)	No report
<i>Albizia harveyi</i>	Rank <10	No report	Rank <10	No report	4 (6)	Rank <10
<i>Mundulea sericea</i>	Rank <10	No report	Rank <10	Rank <10	6 (5)	Rank <10
<i>Aloe vera</i>	No report	Rank <10	No report	No report	6 (5)	No report
<i>Solanum incanum</i>	No report	Rank <10	Rank <10	Rank <10	8 (4)	Rank <10
<i>Psidium guajava</i>	Rank <10	No report	No report	No report	No report	4 (5)
<i>Maytenus senegalensis</i>	Rank <10	Rank <10	Rank <10	Rank <10	No report	6 (4)
<i>Combretum obovatum</i>	Rank <10	Rank <10	No report	No report	Rank <10	6 (4)

Note: Bolded numbers outside parentheses are use categories; bolded numbers inside parentheses are species records per category use; a species not top-ranked is indicated at lower frequency as "rank <10"; the lack of records for a particular species is indicated as "no report".

suggests gender difference in plant use, as do several extreme contrasts with higher numbers of reports from men. A number of species were reported by several men but no women, and *W. salutaris* seem to be reported 16 times by men but never by a woman. This species was mentioned by the medicinal plant vendors in the urban

market, most of whom were men.

Species x use sub-categories

Twenty one of 110 species mentioned by at least six respondents (5% of the 115

respondents) had specific use sub-categories (Table 7). For several of these 21 key species, reports relate to more than one use sub-category and the top two species, *C. abbreviata* and *C. zeyheri*, have six and four major uses respectively. Several ailments/conditions are treated regularly with more than one key species,

Table 5. Numbers of medicinal plants mentioned by men and women at Urumwa, Tanzania.

Number of species	Men	Women	Totals
≤ 10 species	45	50	95
>10 species	17	3	20
Totals	62	53	115

Table 6. Numbers of reports for most frequently reported species, by gender (villages and use categories combined), at Urumwa Forest Reserve, Tabora Region, Tanzania.

Species	Frequency by gender		Species	Frequency by gender	
	Female	Male		Female	Male
<i>Albizia harveyi</i>	1	17	<i>Piliostigma thonningii</i>	1	10
<i>Cajanus cajan</i>	18	1	<i>Premna senensis</i>	4	10
<i>Cassia abbreviata</i>	26	113	<i>Pterocarpus angolensis</i>	8	16
<i>Combretum fragrans</i>	1	12	<i>Pterocarpus tinctorius</i>	2	14
<i>Combretum zeyheri</i>	53	35	<i>Schrebera trichoclada</i>	1	19
<i>Dalbergia nitidula</i>	1	12	<i>Securidaca longipedunculata</i>	9	21
<i>Dichrostachys cinerea</i>	10	4	<i>Strychnos potatorum</i>	2	11
<i>Ekebergia benguelensis</i>	16	32	<i>Strychnos spinosa</i>	2	21
<i>Entada abyssinica</i>	2	21	<i>Tamarindus indica</i>	5	10
<i>Flacourtia indica</i>	4	14	<i>Terminalia sericea</i>	19	29
<i>Friesodielsia obovata</i>	11	14	<i>Vepris glomerata</i>	5	15
<i>Kigelia africana</i>	11	27	<i>Warburgia salutaris</i>	0	16
<i>Maytenus senegalensis</i>	4	11	<i>Ximenia caffra</i>	3	11
<i>Ozoroa insignis</i>	7	19	<i>Xylopia odoratissima</i>	25	15
			<i>Zanthoxylum chalybeum</i>	2	14

notably diarrhoea (6 species) and infertility (5 species). As a result, uses for gastro-intestinal (11 entries) and urino-genital conditions (10 entries) are particularly prominent, presumably indicating their regular, familiar and widely-practiced use. In contrast, there are no key species for treating skin disorders and only one (*Schrebera trichoclada*) for treating respiratory complaints.

Furthermore, only low proportions of respondents shared opinions over use of medicinal plants. In the case of men, the number of respondents mentioning any species for a particular use sub-category was never greater than 20% of those consulted (62 individuals). There was more convergence of views among the women with over 25% of the 53 female respondents agreeing on species used in relation to placenta expulsion (*C. cajan*), anal eczema in infants and diarrhoea (*C. zeyheri*), and infertility (*X. odoratissima*).

DISCUSSION

The findings from this study indicate that communities around Urumwa are highly knowledgeable of medicinal

plant species (> 100 species to treat more than seventy diseases and conditions), with a clear contrast existing in ethnobotanical knowledge. The large number of species recorded here points to a dependence on a wide diversity of plant species to treat various ailments and also to the existence of a substantial amount of ethnobotanical knowledge on herbal plants among the Urumwa community.

The number of plants and diseases recorded from the present study at Urumwa, is higher than reported by Ruffo (1990) and Abdallah (2001) for a survey of a whole Tabora Region and a survey of some villages around Urumwa respectively. The scale of survey, and the purpose, for this study differ from those of past researchers in the same area, but it effectively highlights that local people around Urumwa are endowed with ethnobotanical information especially about the Miombo plants on which they depend day to day for primary health care needs. Our results match those of Katambo (1999) who concluded that about 60% of Miombo trees and other plant species in Tabora woodlands play medicinal roles. Similarly a study by Mbwambo (2000) noted that almost every Miombo species mentioned by local people from Urumwa Forest Reserve has medicinal

Table 7. Key medicinal plants, use categories/sub-categories with records (combined for six villages) by gender for Urumwa.

Botanical name	Local name	Main use category	Use sub-category	Female reports	Male reports	Total reports
<i>Cajanus cajan</i>	Mbaazi	Urino-genital	Placenta expulsion	15 (23)	0 (0)	15 (23)
		Gastro-intestinal	Hernia	1 (3)	18 (46)	19 (49)
		Gastro-intestinal	Stomach ache	6 (35)	18 (79)	24 (114)
<i>Cassia abbreviata</i>	Mlundalunda	Urino-genital	Gonorrhoea	3 (6)	12 (43)	15 (49)
		Urino-genital	Syphilis	3 (3)	11 (24)	14 (27)
		Fevers	Malaria	3 (5)	12 (21)	15 (26)
		Fevers	Non-malarial fever	3 (4)	7 (11)	10 (15)
<i>Combretum fragrans</i>	Mluzyaminzi	Fevers	Malaria	1 (5)	7 (21)	8 (26)
<i>Combretum zeyheri</i>	Msana	Gastro-intestinal	Diarrhoea	16 (40)	10 (53)	26 (93)
		Gastro-intestinal	Stomach ache	7 (35)	5 (79)	12 (114)
		Other human diseases	Anaemia	7 (25)	7 (44)	14 (69)
		Paediatric conditions	Anal eczema	19 (24)	6 (13)	25 (37)
<i>Ekebergia benguelensis</i>	Mtuzya	Central nervous system	Mental illness	5 (6)	10 (20)	15 (26)
		Rituals and fortune	Love	4 (4)	7 (10)	11 (14)
		Rituals and fortune	Luck	5 (8)	9 (24)	14 (32)
<i>Entada abyssinica</i>	Mfutwambula	Urino-genital	Gonorrhoea	1 (6)	8 (43)	9 (49)
		Other human diseases	Anaemia	0 (25)	6 (44)	6 (69)
<i>Flacourtia indica</i>	Msingila	Urino-genital	Infertility	3 (73)	5 (61)	8 (134)
<i>Friesodielsia obovata</i>	Msalasi	Gastro-intestinal	Stomach ache	1 (35)	5 (79)	6 (114)
		Urino-genital	Infertility	5 (73)	6 (61)	11 (134)
<i>Kigelia africana</i>	Mlegea	Central nervous system	Convulsions	1 (10)	11 (38)	12 (48)
		Other human diseases	Anaemia	7 (25)	6 (44)	13 (69)
		Rituals and fortune	Rituals	2 (6)	9 (20)	11 (26)
<i>Maytenus senegalensis</i>	Mwezya	Rituals and fortune	Luck	2 (8)	8 (24)	10 (32)
<i>Ozoroa insignis</i>	Mwembepori	Gastro-intestinal	Diarrhoea	3 (40)	9 (53)	12 (93)
<i>Piliostigma thonningii</i>	Mtindwambogo	Pain and inflammation	Snakebite	1 (3)	6 (51)	7 (54)

Table 7. Contd.

<i>Psidium guajava</i>	Mpera	Gastro-intestinal	Diarrhoea	3 (40)	4 (53)	7 (93)
<i>Pterocarpus angolensis</i>	Mninga	Gastro-intestinal	Diarrhoea	2 (40)	5 (53)	7(93)
		Other human diseases	Anaemia	5 (25)	8 (44)	13 (69)
<i>Pterocarpus tinctorius</i>	Mkulungu	Gastro-intestinal	Diarrhoea	2 (40)	4 (53)	6 (93)
<i>Schrebera trichoclada</i>	Mputika	Pain and inflammation	Snakebite	0 (3)	6 (51)	6 (54)
		Respiratory	Coughs	0 (7)	6 (25)	6 (32)
<i>Securidaca longipedunculata</i>	Mteyu	Urino-genital	Infertility	5 (73)	11 (61)	16 (134)
		Gastro-intestinal	Diarrhoea	5 (40)	7 (53)	12 (93)
<i>Terminalia sericea</i>	Mzima	Gastro-intestinal	Stomach ache	6 (35)	6 (79)	12 (114)
		Paediatric conditions	Anal eczema	3 (24)	4 (13)	7 (37)
		Urino-genital	Infertility	4 (73)	5 (61)	9 (134)
<i>Vepris glomerata</i>	Mlungusigiti	Urino-genital	Infertility	4 (73)	5 (61)	9 (134)
<i>Vitex mombassae</i>	Mtalali	Urino-genital	Infertility	5 (73)	4 (61)	9 (134)
		Other human diseases	Diabetes	1 (4)	3 (8)	6 (12)
<i>Xylopia odoratissima</i>	Mshenene	Urino-genital	Infertility	21 (73)	10 (61)	31 (134)

Figures in parentheses are number of species reported per use category.

value. Treatments for gastro-intestinal and urino-genital disorders were particularly commonly reported, and treated with a wide range of species. Noteworthy in this context were *C. abbreviata* (gastro-intestinal conditions – stomach ache, hernia), *C. zeyheri* (gastro-intestinal conditions – diarrhoea; paediatric conditions – anal eczema) and *X. odoratissima* (urino-genital conditions – infertility) attracting numerous reports from respondents of both genders – suggesting well-established reputations for relieving

conditions familiar in households.

This familiarity is consistent with a World Health Organization (WHO, 2005) view, that gastro-intestinal diseases are often associated with the widely and frequently prevalent occurrences of unsafe water and inadequate sanitation and hygiene, which are among the risks faced by many Urumwa households. Worldwide, especially in developing countries, medicinal plants seem to treat more or less similar cases of ailments. In a study by Hamisy et al. (2000) gastrointestinal

diseases mainly diarrhoeal, were the most common diseases treated with medicinal plants by communities around the Uluguru Mountain in Tanzania. A study by Mathabe et al. (2006) in Limpopo Province, South Africa observed more than twenty species used as traditional remedies to treat diarrhoea.

Men from the study area are ethnobotanically more knowledgeable than women – confirming the existing opinions that, communities' knowledge of plants often differs between women

and men. Women were noteworthy for the frequent citing of *C. cajan*, *C. zeyheri* and *X. odoratissima*, while men frequently cited (compared with women) *Albizia harveyi*, *C. abbreviata* and *Warburgia salutaris* – providing an understanding of medicinal plants preference by gender especially about plants that assist in curing diseases of their own sex. The variations between gender ethnobotanical knowledge at Urumwa arise probably from men's high interaction with the wild environment while undertaking activities such as hunting and livestock supervision, and the collection of medicinal plants. Similar observations and reasons are reported by Mbwambo (2000) for the same locality, Letšela et al. (2003) for Lesotho, and Fassil (2003) for rural communities of the north-western Ethiopian highlands. In contrast, women showed familiarity with weedy and semi-domesticated plants found around homesteads.

Variations with regards to medicinal plants knowledge between men and women also exist in other parts of the world as reported by various researchers. For instance, Maikhuri and Gangwar (1993) in India and Hanazaki et al. (2000) in Brazil concluded that men were more knowledgeable than women after they quoted more medicinal plant species than their female counterparts. Different results are reported by Figueiredo et al. (1993) where women knew more about medicinal plants than men because they are closest to medicinal plants processing.

Similarly, among the Carib population of Guatemala, the majority of people who knew and used medicinal plants were women (Girón et al., 1991).

Conclusion

The study has revealed a significant contribution of medicinal plants knowledge to the livelihood health security of communities around the Miombo woodland of Urumwa. The wealth of this ethnobotanical knowledge is evidenced by the great number of plants recorded, for treating various diseases, and the knowledge offers a basis for prioritizing further phytochemical and pharmacological studies of Miombo trees. At Urumwa, men are more ethnobotanically knowledgeable than women, indicating their knowledge potential in the daily performance of traditional medicine system. It is recommended that the ethnobotanical knowledge of medicinal plant resources at Urumwa be recognized and preserved to improve and ensure the future effectiveness of the primary health care system. Furthermore, due to the great interest in studying medicinal plants, there is a need to carry out phytochemical and pharmacological studies for most unstudied but potential species at Urumwa to validate usage, find new pharmaceuticals, increase confidence among users and contribute to the development of the traditional medicine sector.

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