Egypt. J. Bot. **Vol. 62**, No. 2, pp. 337-357 (2022)

Egyptian Journal of Botany
http://ejbo.journals.ekb.eg/

Ethnobotanical Study of Medicinal Trees and Shrubs from the Rashad District of Southern Kordofan, Sudan

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THIS IS the first quantitative ethnobotanical study conducted in the Rashad district, Southern Kordofan, Sudan. The objective was to collect and identify trees and shrubs used by local people for medicinal purposes and summarize local knowledge about traditional herbal medicine. Ethnobotanical data were obtained by conducting several ethnobotanical surveys, questionnaires, semi-structured interviews, field observations, inquiries, and Group gatherings from September 2018 to January 2019. Quantitatively, ethnobotanical data were analyzed in terms of use value (UV) and relative frequency of citation (RFC). A total of 56 trees and shrubs used in medicine and belonging to 22 families were listed in this study. The most common families were Fabaceae (14%), Combretaceae (8%), and Malvaceae (5%). In terms of growth form, 35 species (61%) were trees and 21 (39%) were shrubs. Fruits were the most common structures used to prepare herbal medicine (23%) and were usually administered as a powder (13%). The most commonly used species based on UV by the local community in the Rashad area were as follows: *Adansonia digitata* L. for dysentery diseases, followed by *Tamarindus indica* L. for treating malaria and fever, *Balanites aegyptiacus* (L.) Delile for treating enteric worms, *Vangueria madagascariensis* J. F. Gmel and *Guiera senegalensis* J. F. Gmel for kidney problems, and *Ximenia americana* L. for toothaches. This study revealed significant local ethnobotanical knowledge and direct human-plant interactions. Recording indigenous use of woody plants is crucial for identifying potential species for future domestication.

Keywords: Community, Medicinal plants, Rashad, Southern Kordofan, Sudan, Traditional knowledge.

Introduction

Ethnobotany is the study of the link between plants and humans, derived from the words "ethno" (people) and "botany" (plants) and is a sub-discipline of ethnobiology. Ethnobotany is the study of the intricate connections that exist between plants (and their uses) and civilization. The study of how plants have been used in medicine, divination, cosmetics, textile dyeing, construction, tools, money, clothing rituals, social life, and music all fall within the subject of ethnobotany (Shumsky et al., 2014). Approximately 60%–80% of individuals worldwide rely on herbal medicines for their main healthcare requirements (WHO, 2002; Ajose, 2007) and over 80% of prescription drugs were isolated, at least initially, from plants, fungi and some animals (Roberson, 2008). The study of plant species' cultural values has become increasingly important in modern medical, agriculture, pharmaceutical, and nutraceutical industries. Ethnobotanical methods are useful for identifying regionally important plant species, especially for novel crude medicines (Cámara-Leret et al., 2014; Behera et al., 2021). The documentation of indigenous knowledge, particularly regarding therapeutic benefits of plant species, has resulted in developing a number of important contemporary

#Corresponding author email: hehong@nwsuaf.edu.cn
Received 02/07/ 2021; Accepted 18/10/ 2021
DOI: 10.21608/ejbo.2021.81264.1708
Edited by: Prof. Dr. Ahmad K. Hegazy, Faculty of Science, Cairo University, Giza, Egypt.

medicines. Plant medicines are administered by traditional healers in several African nations, including Sudan (Issa et al., 2018).

Today, people are willing to discuss their ethno-medical and cultural plants more openly and whether they are toxic or beneficial for medicinal purposes. Plants also support soil fertility conservation, erosion prevention, oxygen recycling, and water, human, and animal health care. Human survival depends on our innate inquisitiveness, observing by trial and error in all aspects of the environment (Calixto, 2005). The formal study of traditional knowledge in indigenous communities is ethnobotany, which combines knowledge of plant diversity and records how people use these indigenous plants in their local regions (Cámara-Leret et al., 2014). In a given region, millions of people, communities, and societies use indigenous plants as sources of food, clothing, housing (shelter), firewood, medicinal, and other household activities (Hussain, 2004).

A lot of knowledge on using indigenous medicinal plants in Sudan has been gathered in recent decades (Musa et al., 2011; Khalid et al., 2012; Issa et al., 2018; Hegazy et al., 2020). Given the widespread use of numerous plant species, as well as the diversity of cultures, languages, and beliefs across Sudan's many ethnic groups, there are high expectations in Sudan for extensive traditional knowledge of medicinal plant species (Saeed et al., 2015). Sudan is undergoing rapid changes in cultural norms and systems, so there is a risk that traditional and local medicinal plant knowledge may become obsolete, as most indigenous traditional knowledge is passed down orally to local community members. For this reason, the current study was performed in Rashad, Sudan, to assess and document traditional and local knowledge of medicinal plants, as well as their use from the perspective of traditional healers and local community members (Musa et al., 2011). With such a diverse climate, history, and array of traditional medicinal herbs, this information forms an essential part of the Sudanese cultural legacy, as the Sudanese people have developed distinct and ancient traditional medical expertise (Khalid et al., 2012; Issa et al., 2018).

The main objective of this study was to document traditional medicinal trees and shrubs used by tribal people living in the Rashad district of Sudan. The study also focused on collecting, identifying, and documenting the widely available medicinal trees and shrubs used by local people for treating human ailments in different parts of the study area. This study also aimed to assess the current status of medicinal trees and shrubs, indigenous knowledge of people in the study area, and document the plants parts used for medicinal purposes, their preparation method, and administration to patients.

Materials and Methods

Study area

The Rashad district lies in the center of the Kordofan between latitudes 10° and 13° N, and longitudes 29° and 33° E. It covers an area of approximately 7,872 km^2 (Fig. 1). Generally, people use this area for agriculture and grazing activities. It is located on a central clay plain in the north-west part of the Nuba Mountains. The climate is dry land savannah, with peak temperatures (an average of 35°C) in April–June (summer) and the lowest temperatures (an average of 20°C) in November–March (winter). The annual rainfall in the study area is between 500 and 800mm. The fall season extends from May to October (Adam et al., 2013; Daldoum et al., 2018). Most of the area is a basement complex overlaid by Nubian sandstone. The plains are covered by alluvial or clay deposits, mostly along valleys and seasonal streams. Vegetation cover in the Rashad area consists of leguminous trees (Fabaceae) dominated by the genus *Acacia* as well as annual grasses and shrubs. However, vegetation covers varies with rainfall patterns and soil structure (Adam et al., 2013). According to the Human Development Report (UNDP, 2003), the total population in the study area was estimated at 241,046 and two main livelihood groups reside in the study area, namely sedentary livestock farmers and farmers.

Data collection and interviews with local people

Group discussions were conducted by following the participatory method described by Martin (1995) using two basic approaches. The first involved interviews on medicinal plants and their use using structured and semi-structured questionnaires (Gedif & Hahn, 2003; Amiguet et al., 2005). The second approach involved an "inventory" of information and collection of plant species while visiting the forest. We selected 150 traditional healers (118 male and 32 female) of various ages (20–93) as the key informants with the aid of local elders, administrative staff, and forest cooperation office workers in the Rashad district.

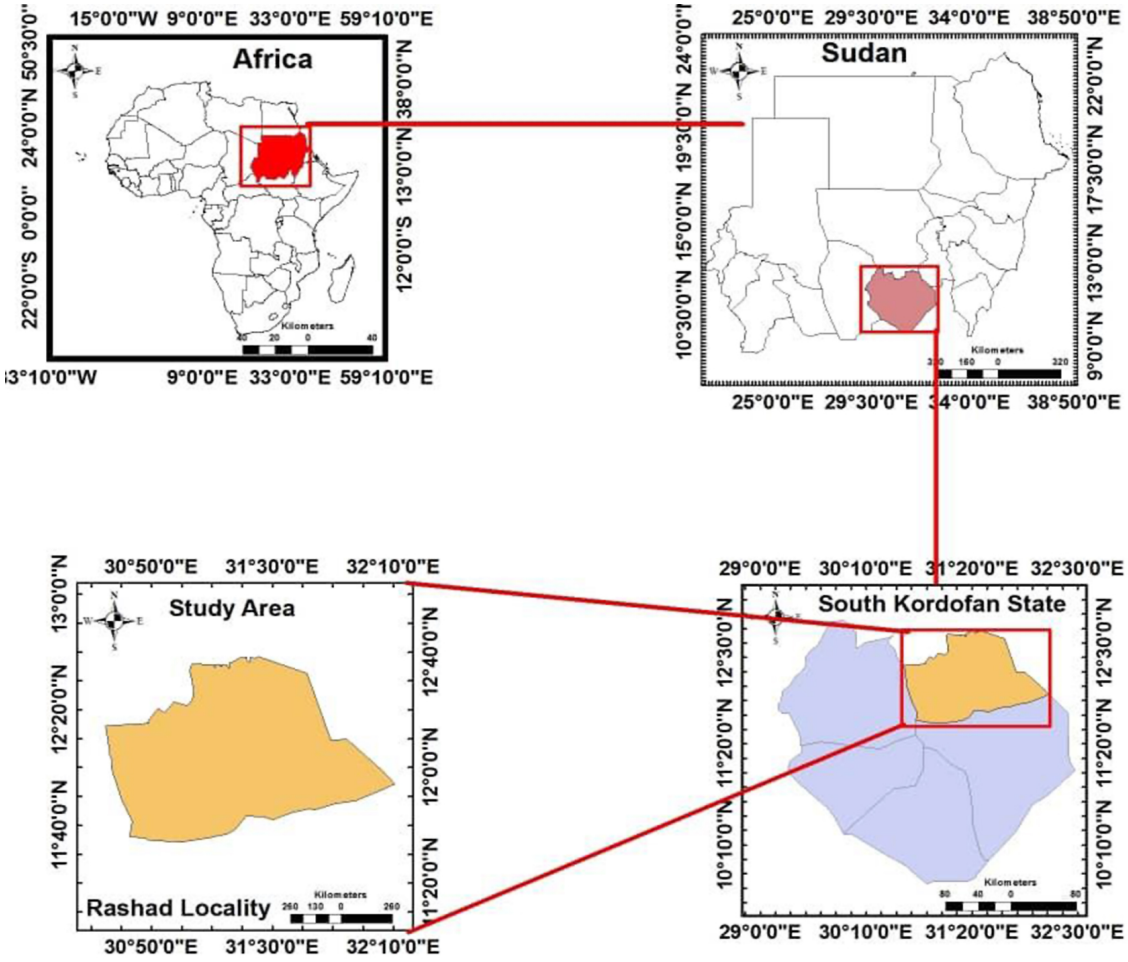

Fig. 1. Map of the study area

Prior to the interview process, meetings were arranged with informants and local elders to explain the aims of the study and establish confidence among respondents to help provide accurate information without suspicion or concerns. Face-to-face meetings were held with traditional healers. These key informants were asked to provide information on plants for treating disease in humans, the type of plants (trees or shrubs) and the parts used, the administration routes, the preparation methods for remedies, the doses used, and any known risks. Each interviewee's age, name, and formal educational level was also recorded. The interview's geographic location and date were also registered. The scientific names and plant families were presented to interviewees in accordance with the plant's checklist standards (www.ipni.org/).

Species identification and citation

Most woody plants in this study were collected with assistance of local people and identified in the field using floral guide books (Offiah & Hall, 2003). Species not identified in the field were collected, tagged, dried, and brought to the University of Khartoum, Department of Silviculture, Faculty of Forestry for further identification. Digital photographs of live tree and shrub species were taken in the field and samples were further identified by consulting relevant literature, such as the "Flora of the Eastern Nuba Mountains" (El Ghazali, 1993), "Trees and Shrubs of Sudan" (El Amin, 1990), and specimens for comparative analysis were deposited in the Forestry Research Center Herbarium at Soba.

Data analysis

After completing field work, all data were entered in an Excel sheet. Woody plant species collected in the field were divided based on habitat and life form. Life forms were sub-divided into (i) shrubs and (ii) trees. Finally, the source habitat was classified in terms of (i) wild, (ii) cultivated, or (iii) both wild and cultivated. In addition, for each

species, the plant parts used, mode of medication, and categories of ailments were entered in the database for further analysis. Calculations were performed as follows.

The use value (UV)

UVs were used to characterize the relative importance of trees or shrubs species known by local people. The UV helped determine tree and/or shrub species most commonly applied when treating an ailment (Trotter & Logan, 1986; Savikin et al., 2013). The following equation was used to calculate use value:

$$UV = \sum Ui/Ni$$

where *Ui* is the number of use reports indicated by each informant for a particular plant species *i* and *N* is the total number of informants questioned concerning that tree or shrub. When numerous usage reports exist for trees or shrubs, the UV is high and when there are few reports, the UV is low (Vitalini et al., 2013).

Relative frequency of citation (RFC)

The RFC was used to determine the degree of consensus among informants on which trees or shrubs were used for each "species use" category. The RFC was calculated as follows:

$$RFC = (FC)/N \quad (0 < RFC < 1)$$

where *FC* is the number of informants who mentioned the species and *N* is the total number of informants.

Results

Demographic information regarding participants

A total of 150 people were interviewed in this study using a Group discussion and a semi-structured questionnaire. About 118 (78.6%) were male, 32 (21.4%) were female, and 30 were key informants. The majority of respondents were more than 50 years old (42.4%) and 56 informants were aged between 36 and 50 years (37.4%). Thirty informants were between 20 and 35 years old (20%). Less than half of informants had attended primary school (48%; Table 1) and 76% were farmers (Table S1).

Gender, age, and education level were all factors determining medicinal plant knowledge

Males were significantly more knowledgeable about medicinal plants than females and informants over the age of 50 were significantly more knowledgeable about medicinal plants than those between the ages of 20–35 and between the ages of 36–50. Literate informants who attended primary school were significantly more knowledgeable about medicinal plants than illiterate informants (Table 2).

Medicinal species diversity

We identified 56 trees and shrubs species belonging to 22 families with traditional use as herbal remedy for a variety of illnesses (Table 3). The most common medicinal plant families in use were Fabaceae (14 reported species), Combretaceae (8), Malvaceae (5), and Apocynaceae and Rubiaceae (3 each), with the remaining families represented by fewer than 3 species (Fig. 2). For life forms, 35 of the 56 species were trees and 21 were shrubs. No plants used medicinally were climber species.

Uses of plants

Parts used: Fruits (23%) were the most commonly used plant structures, although stem bark (15%), leaves (9%), roots (4%), gum (3%), and seeds (2%) were also used (Fig. 3).

Preparation mode: Dry or fresh species samples were used to prepare herbal medicine. Powder (13%) was the most common form used, followed by direct mastication (12%), then decoction, which meant boiling to extract the essence of the material (10%), directly eaten (9%), dermal (applied directly to the skin, 5%), paste of plant material (4%), and cataplasm or poultice, a soft paste applied to the skin (2%; Fig. 4).

TABLE 1. Demographic information of participants

Gender	Count	%	Age	Count	%	Educational status	Count	%
Female	32	21.4	Young (20—35)	30	20	Illiterate	59	39.4
Male	118	78.6	Adult (36—50)	56	37.4	Basic	4	2.6
			Elder (> 50)	64	42.4	Primary (1—8th)	72	48
						Secondary (9—12th)	12	8
						Higher	3	2

TABLE 2. A comparison of the number of therapeutic woody plants reported by different informant groups is reported

Parameter	Informant group	*N*	Mean ± SD	P value
Gender *	Female	117	11.7 ± 8.83	0.000024
	Male	406	40.6 ± 13.6	
Age *	Young (20—35)	106	10.6 ± 8.77	
	Adult (36—50)	189	18.9 ± 11.9	0.039038
	Older (> 50 years)	228	22.8 ± 15.3	
Education *	Illiterate	205	20.5 ± 12.5	
	Basic	16	1.6 ± 2.83	
	Primary	256	25.6 ± 11.2	0.004907
	Secondary	35	3.5 ± 3.37	
	Higher	11	1.1 ± 1.79	

*Significant difference (P< 0.05) between the averages of paired categories

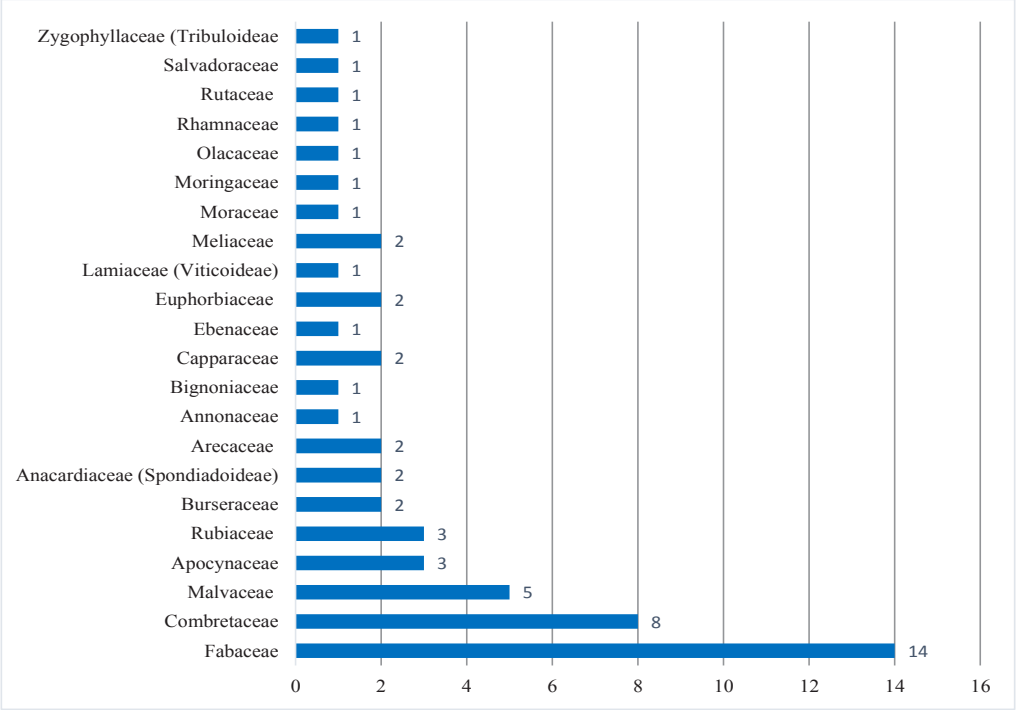

Fig. 2. Plant families with the highest number of cited species

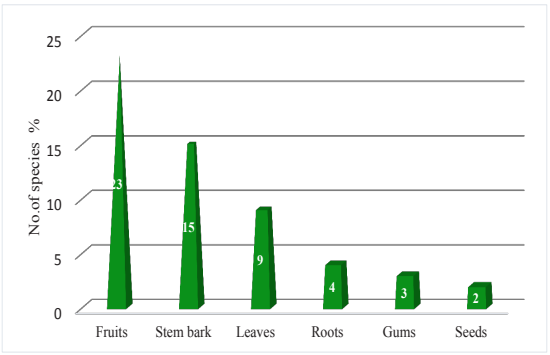

Fig. 3. Plant parts used

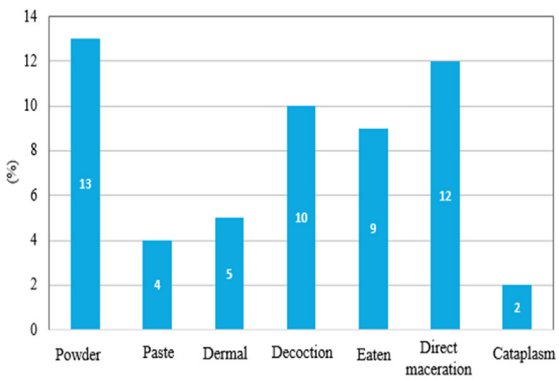

Fig. 4. Percentage of mode of preparation

TABLE 3. Ethno-botanical uses of medicinal trees and shrubs in Rashad District

No	Scientific name	Family	Local name	Habit	Part used	Medicinal Uses	Preparation form
1	*Lannea fruticosa* (Hochst. ex A. Rich.) Engl.	Anacardiaceae	Layoun	Tree	Fruit	Wounds	Paste
2	*Sclerocary birrea*	Anacardiaceae	Homeid	Tree	Fruit	Treating rashes	Paste
3	*Annona senegalensis* Pers.	Annonaceae	Geshta	Shrub	Fruit	Kidney problems	Eaten
4	*Adenium obesum* (Forssk.) Roem. & Schult.	Apocynaceae	El Sim	Shrub	Stem bark	Snake bite	Dermal
5	*Calotropis procera* (Aiton) W. T. Aiton	Apocynaceae	Al Aushar	Shrub	Leaves	Scorpion bite	Dermal
6	*Carissa spinarum* L. (Syn: *Carissa edulis* (Forssk.) Vahl)	Apocynaceae	Allali	Shrub	Leaves	Snake bite	Dermal
7	*Borassus aethiopum* Mart.	Arecaceae	Daleib	Tree	Fruit	Sexual ability	Eaten
8	*Hyphaene thebaica* (L.) Mart.	Arecaceae	Dom	Tree	Fruit	Hypertension	Eaten
9	*Kigelia africana* (Lam.) Benth.	Bignoniaceae	Um Shtoor	Tree	Fruit	Swollen mastitis	Powder
10	*Boswellia papyrifera* (Delile) Hochst.	Burseraceae	Umm Tragtrag	Tree	Gum	Bilharzia	Powder
11	*Commiphora africana* (A. Rich.) Engl.	Burseraceae	Luban Dakar	Tree	Stem bark	Wounds	Paste
12	*Boscia senegalensis* (Pers.) Lam. ex Poir.	Capparaceae	Mukhait-Kursan	Shrub	Fruit	Kidney problems	Powder
13	*Maerua crassifolia* Forssk	Capparaceae	Sarah	Shrub	Leaves	Kidney problems	Eaten
14	*Anogeissus leiocarpa* (DC.) Guill. & Perr.	Combretaceae	Sahab - Silak	Tree	Stem bark	Dysentery	Decoction
15	*Combretum aculeatum* Vent.	Combretaceae	Habil Shehait	Shrub	Stem bark	Snake bite	Cataplasm
16	*Combretum hartmannianum* Schweinf.	Combretaceae	Habil Al Gabal	Tree	Stem bark	Swellings	Cataplasm
17	*Combretum glutinosum* Perr. ex DC.	Combretaceae	Habil	Tree	Stem bark	Asities	Decoction
18	*Combretum molle* R. Br. ex G. Don.	Combretaceae	Habil Khrisha	Tree	Stem bark	Swellings	Decoction
19	*Guiera senegalensis* J. F. Gmel.	Combretaceae	Gubeish	Shrub	Leaves	Kidney problems	Decoction
20	*Terminalia brownii* Fresen.	Combretaceae	Subagk- Darot	Tree	Roots	Gizam	Maceration
21	*Terminalia laxiflora* Engl. & Diels	Combretaceae	Darout Sufaraya	Tree	Stem bark	Cough	Decoction
22	*Diospyros mespiliformis* Hochst. ex A. DC.	Ebenaceae	Goghan	Tree	Fruits	Jaundice	Eaten
23	*Ricinus communis* L.	Euphorbiaceae	Khirui	Shrub	Stem bark	Scorpion bite	Dermal
24	*Jatropha curcas* L.	Euphorbiaceae	Jatrupha	Shrub	Stem bark	Scorpion bite	Dermal
25	*Piliostigma reticulatum (*DC.) Hochst.	Fabaceae	Kharob	Shrub	Fruits	Bronchitis	Maceration
26	*Tamarindus indica* L.	Fabaceae	Aradeib	Tree	Fruits	Malaria & fever	Maceration
27	*Dalbergia melanoxylon* Guill. & Perr	Fabaceae	Abanous	Tree	Roots	Rheumatic pains	Decoction
28	*Erythrina abyssinica* Lam. ex DC.	Fabaceae	Hab Al Aroos	Tree	Seeds	Eye infection	Maceration
29	*Acacia gerrardii* Benth.	Fabaceae	Salgam-	Tree	Stem bark	Swellings	Powder

TABLE 3. Cont.

No	Scientific name	Family	Local name	Habit	Part used	Medicinal Uses	Preparation form
30	*Acacia nilotica* subsp. *adstringens* (Schumach. & Thonn.) Roberty	Fabaceae	Garad- Sunt Abu Arida	Tree	Fruits	Gizam	Maceration
31	*Acacia oerfota* (Forssk.) Schweinf.	Fabaceae	Al Laout	Shrub	Roots	Cough	Decoction
32	*Acacia senegal* (L.) Willd.	Fabaceae	Hashab	Shrub	Gum	Kidney problems	Powder
33	*Acacia seyal* Delile var. *seyal*	Fabaceae	Talih Ahmer	Tree	Stem bark	Dysentery	Powder
34	*Albizia amara* (Roxb.) Boivin	Fabaceae	Arad-Al Arad	Tree	Fruits	Dysentery	Decoction
35	*Albizia anthelmintica* Brongn.	Fabaceae	Girfat Addud	Tree	Leaves	Jaundice	Decoction
36	*Dichrostachys cinerea* (L.) Wight & Arn.	Fabaceae	Kadad	Shrub	Fruits	Abdominal problems	Powder
37	*Faidherbia albida* (Delile) A. Chev.	Fabaceae	El Haraz	Tree	Seeds	Scorpion bite	Paste
38	*Vitex doniana* Sweet	Lamiaceae	Um Touglgul	Tree	Fruits	Sexual ability	Eaten
39	*Prosopis africana* (Guill. & Perr.) Taub.	Fabaceae	Abu Suruj	Tree	Fruits	Wounds	Powder
40	*Adansonia digitata* L.	Malvaceae	Tabaldi	Tree	Fruits	Dysentery	Maceration
41	*Grewia tenax* (Forssk.) Fiori	Malvaceae	Gudaim	Shrub	Fruits	Anemia	Maceration
42	*Grewia villosa* Willd.	Malvaceae	Tikko	Shrub	Fruits	Anemia	Maceration
43	*Thespesia garckeana* F. Hoffm.	Malvaceae	Al Jaghjak	Tree	Fruits	Kidney problems	Eaten
44	*Sterculia setigera* Delile	Malvaceae	Al Tartar	Tree	Gum	Toothache	Powder
45	*Khaya senegalensis* (Desr.) A. Juss.	Meliaceae	Mahogany	Tree	Stem bark	Malaria	Decoction
46	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Tree	Leaves	Malaria	Maceration
47	*Ficus sycomorus* L.	Moraceae	Gumaize	Tree	Stem bark	Abdominal pain	Powder
48	*Moringa oleifera* Lam.	Moringaceae	Moringa	Tree	Leaves	Kidney problems	Eaten
49	*Ximenia americana* L.	Olacaceae	Umm Medeka	Shrub	Leaves	Toothache	Decoction
50	*Ziziphus spina-christi (L.) Desf.*	Rhamnaceae	Nabag-Siddir	Shrub	Fruits	Diarrhea & Dysentery	Eaten
51	*Catunaregam nilotica* (Stapf) Tirveng. (Syn: *Xeromphis nilotica* (Stapf) Keay)	Rubiaceae	Shagarat El marfaaein	Tree	Roots	Rabies	Powder
52	*Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E. A. Bruce)	Rubiaceae	Karmadoda	Shrub	Fruits	Diabetes	Maceration
53	*Vangueria madagascariensis* J. F. Gmel.	Rubiaceae	Kirkir	Shrub	Fruits	Kidney problems	Maceration
54	*Vepris nobilis* (Delile) Mziray	Rutaceae	Fideila	Shrub	Leaves	Snake bite	Powder
55	*Dobera glabra* (Forssk.) Poir.	Salvadoraceae	Shajara Bida	Tree	Stem bark	Wounds	Powder
56	*Balanites aegyptiacus* (L.) Delile	Zygophyllaceae (Tribuloideae)	Heglleeg	Tree	Fruits	Worms expulsion	Maceration

Medication mode: The most frequent uses were gastrointestinal disorders (80% of species), followed by fever and malaria (46%), jaundice (44%), toothache (26%), and diabetes (17%; Fig. 5). This suggests that gastrointestinal diseases are prevalent in the area. The data on diversity of medicinal uses revealed it is common to use a single species to treat a variety of illnesses. For example, *Sarcocephalus latifolius* (Rubiaceae), *Vangueria madagascariensis* (Rubiaceae), and *Ximenia americana* (Olacaceae) were each used to treat three different diseases.

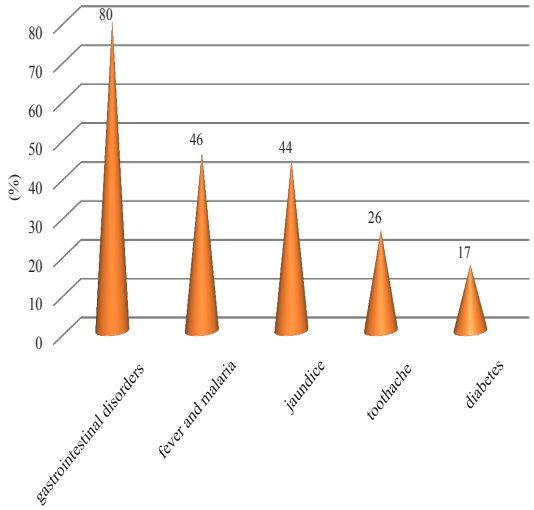

Fig. 5. Percentage of mode of medication

Data on quantitative ethno-medicinal uses

UV: Use value is usually used to assess comparative importance of a single tree or shrub species. UV is high for trees or shrubs with high use records (approximately 1) and smaller for those trees and shrubs with fewer use reports (approximately 0) relative to the number of informants. In the present study, UVs were 0.95–0.47. To further analyze the data, we divided all mentioned trees and shrubs into four groups based on UV. These groups and the number of species and their UV ranges were as follows: Group I, 11 species (0.76–0.95); Group II, 12 species (0.56–0.75); Group III, 19 species (0.26–0.55); and Group IV, 14 species (0.1–0.25; Table 4). Of these groups, members of Group I may be the most important. These species include *Adansonia digitata* L., *Tamarindus indica* L., *Balanites aegyptiacus* (L.) Delile, *Vangueria madagascariensis* J. F. Gmel, *Acacia nilotica* ssp. adstringens (Schumach. & Thonn.) Roberty, *Ximenia americana* L., *Sterculia setigera* Delile, *Guiera senegalensis* J. F. Gmel, *Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E. A. Bruce), *Combretum hartmannianum* Schweinf, and *Grewia tenax* (Forssk.) Fiori. Meanwhile, species in the lowest UV category, Group IV, included *Dichrostachys cinerea* (L.) Wight & Arn (0.12), *Acacia gerrardii* Benth (0.16), and *Albizia amara* (Roxb.) Boivin (0.18).

RFC: RFC was used to quantify the most common trees and shrubs used for herbal medicine and RFC values ranged from 0.04 to 0.63. This parameter was also categorized into five groups. Group I, 23 species (RFC: 0.04–0.14); Group II, 16 species (0.15–0.25); Group III, 6 species (0.26–0.36); Group IV, 4 species (0.37–0.47); and Group V, 7 species (0.48–0.58; Table 4). Most trees and shrubs in higher groups are already established as having high medicinal potential according to pharmacological and ethnobotanical records (Giday et al., 2009). The most significant results were reported for *Dalbergia melanoxylon* Guill. & Perr (0.56) used in the form of a decoction for rheumatic pains, *Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E. A. Bruce) (0.53) for treating diabetes, and *Adansonia digitata* L. (0.24) as a maceration for treating dysentery. Other high RFC species were *Ximenia americana* L, *Grewia villosa* Willd., *Balanites aegyptiacus* (L.) Delile, and *Grewia tenax* (Forssk.) Fiori. All species with high RFC values should be further assessed pharmaceutically and phytochemically to identify their active constituents as a basis for drug discovery.

Discussion

In the present study, the most frequently-cited woody plant species, namely *Ximenia americana*, *Grewia tenax* (Forssk.) Fiori, *Adansonia digitata* L., *Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E.A. Bruce), and *Grewia villosa* have been reported as traditional medicinal plants in other ethnobotanical studies in Sudan. For example, Issa et al. (2018) and Adam et al. (2020) reported that *Adansonia digitata L.* can treat dysentery and *Grewia tenax* can treat anemia and dysentery. El-Kamali (2009) described the use of *Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E.A. Bruce) for treating diabetes and *Ximenia americana* for treating toothache. These citations generally match with accounts collected in the present study.

TABLE 4. Use values and Relative frequency citations for trees and shrubs species in Rashad District

No	Scientific name	Medicinal uses	UV[b]	FC[c]	RFC[d]
1	*Lannea fruticosa* (Hochst. ex A. Rich.) Engl.	Wounds	0.42	14	0.10
2	*Sclerocary birrea*	Treating rashes	0.71	22	0.16
3	*Annona senegalensis* Pers.	Kidney problems	0.58	10	0.07
4	*Adenium obesum* (Forssk.) Roem. & Schult.	Snake bite	0.26	26	0.2
5	*Calotropis procera* (Aiton) W. T. Aiton	Scorpion bite	0.50	6	0.04
6	*Carissa spinarum* L. (Syn: *Carissa edulis* (Forssk.) Vahl)	Snake bite	0.53	22	0.16
7	*Borassus aethiopum* Mart.	Sexual ability	0.21	28	0.21
8	*Hyphaene thebaica* (L.) Mart.	Hypertension	0.58	15	0.11
9	*Kigelia africana* (Lam.) Benth.	Swollen mastitis	0.30	33	0.25
10	*Boswellia papyrifera* (Delile) Hochst.	Bilharzia	0.75	45	0.34
11	*Commiphora africana* (A. Rich.) Engl.	Wounds	0.65	24	0.18
12	*Boscia senegalensis* (Pers.) Lam. ex Poir.	Kidney problems	0.61	32	0.24
13	*Maerua crassifolia* Forssk	Kidney problems	0.25	43	0.33
14	*Anogeissus leiocarpa* (DC.) Guill. & Perr.	Dysentery	0.43	50	0.38
15	*Combretum aculeatum* Vent.	Snake bite	0.23	22	0.16
16	*Combretum hartmannianum* Schweinf.	Swellings	0.76	49	0.37
17	*Combretum glutinosum* Perr. ex DC.	asities	0.48	46	0.35
18	*Combretum molle* R. Br. ex G. Don.	Swellings	0.25	21	0.16
19	*Guiera senegalensis* J. F. Gmel.	Kidney problems	0.83	36	0.27
20	*Terminalia brownii* Fresen.	Gizam	0.20	26	0.2
21	*Terminalia laxiflora* Engl. & Diels	Cough	0.55	19	0.14
22	*Diospyros mespiliformis* Hochst. ex A. DC.	Jaundice	0.5	16	0.12
23	*Ricinus communis* L.	Scorpion bite	0.23	27	0.20
24	*Jatropha curcas* L.	Scorpion bite	0.22	20	0.15
25	*Piliostigma reticulatum (*DC.) Hochst.	bronchitis	0.63	16	0.12
26	*Tamarindus indica* L.	Malaria & fever	0.93	14	0.10
27	*Dalbergia melanoxylon* Guill. & Perr	Rheumatic pains	0.25	74	0.56
28	*Erythrina abyssinica* Lam. ex DC.	Eye infection	0.48	19	0.14
29	*Acacia gerrardii* Benth.	Swellings	0.16	12	0.09
30	*Acacia nilotica* subsp. *adstringens* (Schumach. & Thonn.) Roberty	Gizam	0.90	17	0.13
31	*Acacia oerfota* (Forssk.) Schweinf.	Cough	0.54	14	0.10
32	*Acacia senegal* (L.) Willd.	Kidney problems	0.7	18	0.13
33	*Acacia seyal* Delile var. *seyal*	Dysentery	0.46	10	0.07
34	*Albizia amara* (Roxb.) Boivin	Dysentery	0.17	11	0.08
35	*Albizia anthelmintica* Brongn.	Jaundice	0.45	9	0.06
36	*Dichrostachys cinerea* (L.) Wight & Arn.	Abdominal problems	0.11	49	0.37
37	*Faidherbia albida* (Delile) A. Chev.	Scorpion bite	0.23	15	0.11
38	*Vitex doniana* Sweet	Sexual ability	0.26	27	0.20
39	*Prosopis africana* (Guill. & Perr.) Taub.	Wounds	0.26	35	0.26
40	*Adansonia digitata* L.	Dysentery	0.95	68	0.52
41	*Grewia tenax* (Forssk.) Fiori	anemia	0.76	58	0.44
42	*Grewia villosa* Willd.	anemia	0.33	62	0.47

TABLE 4. Cont.

No	Scientific name	Medicinal uses	UV[b]	FC[c]	RFC[d]
43	*Thespesia garckeana* F. Hoffm.	Kidney problems	0.20	20	0.15
44	*Sterculia setigera* Delile	Toothache	0.86	21	0.16
45	*Khaya senegalensis* (Desr.) A. Juss.	Malaria	0.67	14	0.10
46	*Azadirachta indica* A. Juss.	Malaria	0.50	49	0.37
47	*Ficus sycomorus* L.	Abdominal pain	0.49	16	0.12
48	*Moringa oleifera* Lam.	Kidney problems	0.66	15	0.11
49	*Ximenia americana* L.	Toothache	0.87	67	0.51
50	*Ziziphus spina-christi (L.) Desf.*	Diarrhea & Dysentery	0.70	11	0.08
51	*Catunaregam nilotica* (Stapf) Tirveng. (Syn: *Xeromphis nilotica* (Stapf) Keay)	Rabies	0.21	7	0.05
52	*Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E. A. Bruce)	Diabetes	0.80	70	0.53
53	*Vangueria madagascariensis* J. F. Gmel.	Kidney problems	0.92	34	0.26
54	*Vepris nobilis* (Delile) Mziray	Snake bite	0.59	11	0.08
55	*Dobera glabra* (Forssk.) Poir.	Wounds	0.34	23	0.17
56	*Balanites aegyptiacus* (L.) Delile	Worms expulsion	0.93	59	0.45

[b] Use value.

[c] Frequency of citation.

[d] Relative frequency of citation

The family Fabaceae contains a significant number of plants used for health purposes compared with other families, which is consistent with findings from previous studies in Sudan (Hegazy et al., 2020) and other countries in Africa (Yineger & Yewhalaw, 2007). Therefore, of the local population, most showing an interest in modern knowledge of traditional medicine are from the elder generation. Gender data revealed majority of informants (75%) were male, while female informants comprised just (25%) of the research population.

According to this study, the majority of herbal remedy knowledge is passed down to younger members of the community by seniors >50 years old. Ethno-medicinal indigenous knowledge is typically concentrated among the community's elders and its transmission from elders to the younger generation is rather difficult due to cultural transmission barriers. This may be connected to educated, generally younger people showing a tendency to relocate to more profitable employment outside of their home communities.

UV is important to ensure younger generations are aware of trees and shrubs species with low UVs, as the risk of losing the knowledge about such species is greatest. Trees and shrubs with high UVs should be prioritized for further screening in pharmacological studies, as they are likely to contain good, medicinally active ingredients. These findings were consistent with a previous study conducted in several regions of the world, where fruits are commonly utilized components of herbal medicinal plants.

The high number of citations of traditional medicinal use for these plants suggests the informants in the present study are a reliable information source. Several biological activity and phytochemical assessments of these plant species have also been previously performed. For example, Traore-Keita et al. (2000) found that a chloroform extract of *Adansonia digitata* L. bark showed significant antimalarial properties. Gidado et al. (2005) reported that *Nauclea latifolia* Sm. (Syn: *Sarcocephalus latifolius* (Sm.) E.A. Bruce) leaf extracts at a concentration of 300mg/kg b.w. (by weight) significantly lowered glucose levels of alloxan-induced diabetic rats within four hours. Further, *Grewia tenax* can effectively treat anemia and dysentery and administering an aqueous extract of *Grewia tenax* seeds can raise blood glucose levels (Thomson et al., 2015).

Traditional use of reported species compared with prior studies from different regions in Sudan.

A comparison of the present study with previous reports **(**El-Ghazali, 1987; El-Ghazali et al., 1994; El-Kamali, 2009; Doka & Yagi, 2009; Musa et al., 2011; Suleiman, 2015) is useful, as identifying novel traditional medicinal plants and new applications have been conducted in various areas of Sudan (see Table 5). Suleiman (2015) identified 44 plant species used by people in the Northern Kordofan region, with 22 species containing the same traditional uses as those reported in this study. However, two species, *Maerua crassifolia* Forssk and *Acacia seyal* Delile var. seyal are being used for a variety of purposes. El-Kamali (2009) recorded 48 plant species used for traditional medicinal purposes in the Kordofan State. Among these, 15 species showed the same traditional medical use in this study and 5 species showed various, different traditional medicinal uses (*Acacia nilotica* subsp. adstringens, *Acacia gerrardii* Benth, *Ziziphus spina*-christi (L.) Desf, *Sarcocephalus latifolius* (*Nauclea latifolia*), and *Dichrostachys cinerea*. In West Kordofan, Doka & Yagi (2009) identified 49 plant species used in traditional medicine, of which 12 species showed the same traditional uses as the present study, while 9 species showed different uses. These species included *Acacia senegal*, *Acacia seyal* Delile var. seyal, *Grewia tenax* (Forssk.) Fiori, *Balanites aegyptiaca,* and *Ziziphus spina*-christi (L.) Desf. In the Blue Nile State in south-eastern Sudan, Musa et al. (2011) identified 53 plant species with 15 species showing the same traditional uses as the present study, while 13 species showed different, distinct uses. The species with different uses were as follows: *Acacia senegal*, *Acacia seyal* Delile var. seyal, *Anogeissus leiocarpus*, *Acacia gerrardii* Benth, *Acacia nilotica* subsp. adstringens*, Lannea fruticose*, *Grewia villosa*, *Piliostigma reticulatum*, *Senna occidentalis*, *Tephrosia uniflora*, *Strychnos spinose*, *Terminalia laxiflora,* and *Ximenia americana*. Finally, according to Sudanese medicinal herb literature, El Ghazali (1987) and El-Ghazali et al. (1994) recorded several plants with the same or very similar use to those identified in the present study.

Conclusions

The large number of traditional medicinal plants described in this study shows that the Rashad region contains a diverse range of medicinal trees and shrubs and that local people are aware of their applications. Therefore, these species are likely to continue contributing vital roles in health care in the region. It is also critical to assess their effectiveness and pharmacological potential, as well as potential toxic effects. The current study could help support preservation of such a rich legacy, while providing useful contribution to information concerning Sudanese pharmacopeia.

This study is the first ethnobotanical survey that included information on 56 species belonging to 25 families. The main findings were that fruits are the most used plant part (23%), trees the most usual source of medicines (61% of life forms), and powder the most frequent form of administration (23%). The highest UV (0.92) was recorded for *Adansonia digitata*, which was used for dysentery, and the highest RFC value was for *Dalbergia melanoxylon* Guill. & Perr, which was mentioned by 74 of respondents and had an RFC value of 0.56. The medicinal knowledge from this study could form the basis for future pharmacological and phytochemical studies that may highlight new opportunities for plant-based drug discovery.

*List of abbreviations***: WHO**, World Health Organization; **UV**, Use Value; **RFC,** Relative Frequency of Citation; **UV^{b}**, Use Value; **FC^{c}**, Frequency of Citation; **RFC^{d}**, Relative Frequency of Citation; **UNDP** United Nations Development Program.

Acknowledgment: The authors are thankful to the Department of Silviculture, University of Khartoum and Northwest A&F University for providing funds and facilities. We thank the local communities of the Rashad region, Sudan, for participating in the ethnobotanical survey and providing valuable information. We also thank all those who helped us in this work.

Competing interests: The authors report no conflicts of interest regarding this work.

Authors' contributions: Hong He and Haytham H. Gibreel supervised the work, guided the final write-up and checked the manuscript. Khalid A E Eisawi and Omer M. Abdalla carried out the ethnobotanical survey, and participated in the collection of data. Tayyab Shaheen and Emad H. E. Yasin assisted in editing the manuscript and provided technical expertise in data analysis and presentation. All authors have read and approved the final manuscript.

Ethics approval: Not applicable.

TABLE 5. Comparative of traditional uses of reported species with previous studies from different region in Sudan

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
Abrus precatorius	Spleen problems					Snake bite Headache
Acacia nilotica subsp. adstringens	Stomachache Cold and flu Wounds	Cold and flu and pharyngitis Tonsillitis Fever Measles Hypertension Catarrh Antiseptic	Hypertension	Cough	Phlegmatic cough Furuncles Malaria	Cold and flua Tonsillitis
Acacia oerfota	Back pain Swellings Snake bite Toothache	Antirheumatic		Tooth cavity	Toothache Headache Snake bite	Swellings Scorpion sting
Acacia senegal	Haematuria Toothache	Rheumatoid arthritis Heartburn		Giardiasis	Kidney problems	
Acacia seyal	Rheumatic pain			Leprosy Bleeding	Diarrhoea Dysentery	Diarrhoe Dysentery
Acanthorrhinum ramosissimum	Evil eye					
Adansonia digitata	Giardiasis Stomachache	Dysentery Diarrhoea Stomachache Fever Kidney stones	Fever Diarrhoea	Pain after birth Diarrhoea Anthelmin-tic	Malaria Diarrhoea Dysentery	Stomachache
Albizia anthelmintica	Anthelmintic Wounds Stomachache Jaundice	Anthelmintic	Anthelmintic			Stomachache
Allium sativum	Haemorrhoids					Haemorrhoids
Anastatica hierochuntica	Postpartum					
Anogeissus leiocarpus	Toothache Jaundice Malaria	Diabetes Dysentery Wound Urine retention Malaria			Cough Giardiasis Dysentery	Cough
Anticharis senegalensis	Swellings					Swellings
Arachis hypogaea	Bilharzia			Scorpion bite		
Aristolochia bracteolata	Malaria Ear infection Headache	Malaria HIV-1 Scorpion sting Ear infection Wounds	Scorpion sting		Malaria	Malaria Antitumour Scorpion sting

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994))
Azadiracta indica	Rheumatic pain Malaria	Toothache Headaches	Antipyretic Backache		Malaria, fever, Jaundice	Fever Scorpion sting Snake bite Intestinal spasm Anthelmintic Constipation
Balanites aegyptiaca	Diabetes Hypertension Bilharzia Jaundice	Stomachache Anthelmintic Dysentery Constipation Jaundice Diabetes	Antispasmodic Stomach pain Diabetes	Malaria Kidney disorders		Diabetes Constipation Constipation Bilharzia Wound
Bergia suffruticosa	Eczema					Syphilis Leucoderms
Blepharis linariifolia	Kidney disorders Diabetes	Swellings	Stomach pain Kidney stone	Urine retention		Stomach pain Bilharzia
Boswellia papyrifera	Wounds Hypertension Toothache Tonic Diabetes Diarrhoea Anaemia			Dysentery Respiratory infections	Bilharzia Diarrhoea, dysentery	Jaundice
Calotropis procera	Scorpion sting Wounds	Scorpion sting Haemorrhoids Rheumatic pain Wounds	Haemorrhoids Scorpion sting	Scorpion sting Rheumatic pain		Wounds Rheumatic pain Scorpion sting Jaundice
Carissa spinarum (Syn. *C. edulis*)	Evil eye		Kidney disorders Charm and madness		Treating rashes	Skin lesions Stomachache Headache Cough Anthelmintic
Cassia arereh	Stomachache Malaria Toothache Haematuria Evil eye				Stomachache Diarrhoea Evil eye	
Catunaregam nilotica(Syn. *Randia nilotica*, *Xeromphis nilotica*)	Malaria	Swellings	Swellings	Rabies	Measles	Jaundice

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
	Jaundice	Tonsillitis	Tonsillitis		Toothache	Anthelmintic
	Prostate	Dandruff	Jaundice			Rabies
			Dandruff			
Catunaregam taylorii	Kidney disorders					
Chamaecrista nigricans (Syn. *Senna nigricans*)	Haematuria					Stomachache
Cissus quadrangularis	Syphilis	Syphilis	Haemorrhoids	Syphilis	Acne	Pruritus
	Dandruff	Asthma		Leprosy	Evil eye	Scorpion sting
	Back pain	Haemorrhoids		Snake bite		Stomachache
	Wounds	Snake bite				Joint pain
		Tuberculosis				
Cleome gynandra (Syn. *Gynandropsis gynandra*)	Improve eyesight					
	Spleen problems					
	Worm expulsion					
	Headache					
	Rheumatic pain					
Cleome viscosa L.	Evil eye					
Clitoria ternatea	Jaundice				Constipation	Constipation
	Laxative					
	Giardiasis					
Combretum aculeatum	Swellings			Snake bite		Wound
						Constipation
						Tuberculosis
Combretum hartmonnianum	Rheumatic pain					Jaundice
Commiphoragileadensis	Measles	Antirheumatic				
		Typhoid fever				
Cordia africana	Jaundice	Cuts, burns and wounds	Cuts, wounds and burns			
Coriandrum sativum	Foot pain					Hypertension
Ctenolepis cerasiformis	Tonic					
Cymbopogon schoenanthus	Diabetes	Antispasmodic				Stomachache
	Stomachache	Stomachache				
		Gout				
		Helminthiasis				
		Inflammationof prostate				
Cyperus rotundus	Kidney stones					
	Haematuria					
	Worm expulsion					
	Headache					
	Sexual debility					
Detarium microcarpum	Stomachache		Rheumatism			
Dichrostachys cinerea	Jaundice		Wounds		Stomachache	

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
	Asthma				Diarrhoea	
	Evil eye				Toothache	
					Jaundice	
					Sexual debility	
Dicoma tomentosa	Jaundice					Toothache
						Febrifuge
						Mumps
Drimia maritima	Sexual debility					
	Snake bite					
Echinops longifolius	Scorpion sting					
Eucalyptus camaldulensis	Toothache					
Fagonia cretica	Skin allergy			Skin allergy		Stomachache
						Muscular pain
Geigeria alata	Diabetes	Antispasmodic	Diabetes			Stomachache
	Stomachache	Stomachache	Antispasmodic			Epilepsy
	Kidney disorders	Intestinal complaints	Intestinal complaints			
	Hypertension	Anthelmintic	Hypertension			
		Diabetes	Cough			
		Hypertension				
		Cough				
Grewia flavescens	Anaemia			Stomach disorders		Tuberculosis
				Leprosy		
Grewia tenax	Wounds	Tonsillitis, throat infections				Tonsillitis
	Anaemia	Anaemia				Swellings
		Malaria				Jaundice
		Tonic				Trichoma
Grewia villosa	Wounds	Wounds			Cancer	Constipation
	Eye infection	Syphilis				
		Arthralgia				
		Eye ache				
Guiera senegalensis	Acid reflux	Jaundice	Stomach pain			Leprosy
	Malaria	Antipyretic	Jaundice			Antipyretic
	Kidney disorders	Antispasmodic	Malarial fever			Leprosy
	Diabetes	Diarrhoea	Antispasmodic			Vomiting
	Tonic	Leprosy	As a tonic			
		Diabetes				
		Hypertension				
		Malarial fever				
		Wound				
Hibiscus sabdariffa	Hypertension	Cough	Snake bite			
	Cold and flu	Headache	Scorpion sting			
	Hypertension	Haematuria	Haemorrhoids			

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
	Haemorrhoids	Hypertension	Headache			
		Fever				
		Snake bite				
		Scorpion sting				
Hydnora abyssinica (Syn. *H. johannis*)	Stomachache				Cholera	Dysentery
	Diarrhoea				Diarrhoea	Tonsillitis
					Dysentery	Swellings
	Dysentery				Evil eye	
Hyphaene thebaica	Diabetes					Spleen problems
	Diarrhoea					Stomachache
	Kidney disorders					Wound[5]
Jatropha curcas	Sexual debility		Laxative		Giardia	
					Jaundice	
					Malaria	
					Fever	
Khaya senegalensis	Malaria	Malarial fever	Malarial fever		Malaria	Headache
	Jaundice	Syphilis	Asthma		Diabetes	Stomachache
		Taeniacide	Intestinal complaints			Dysentery
		Hepatic inflammation				
		Jaundice				
		Trachoma				
		Enterogastritis				
Kigelia africana	Breast swellings			Swollen mastitis	Breast tumour	
	Rheumatic pain				Hypertension	
	Leprosy				Diabetes	
Lannea fruticosa	Swellings				Dysentery	
					Wound	
Leonotis nepetifolia	Evil eye					Swellings
						Stomachache
Leptadenia arborea	Acid reflux	Jaundice		Jaundice		Snake bite
	Diarrhoea	Dandruff		Dandruff		Gonorrhoea
	Swellings					Swellings
	Jaundice					
Leptadenia pyrotechnica	Rheumatic pain	Antirheumatic	Rheumatism			
		Sciatica				
		Urine retention				
Lepidium sativum	Kidney stones					Swellings
Maerua pseudopetalosa	Diabetes					
	Sexual debility					
	Hypertension					
	Kidney disorders					
Maerua oblongifolia	Evil eye/luck					Snake bite
Martynia annua	Scorpion sting					

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
Mentha spicata	Flatulence					Flatulence
Moringa oleifera	Back pain					
	Fatigue					
Nigella sativa	Articulation pain					Diabetes
	Stomachache					Hypertension
	Headache					Stomachache
	Jaundice					
Oldenlandia uniflora	Eczema					
	Leprosy					
Opuntia ficus-indica	Dandruff					
Pennisetum glaucum	Measles					Rheumatic pain
	Sexual debility					
Plicosepalus acaciae	Evil eye					Lactagogue
	Repels insect from ear					Wound[2]
Piliostigma reticulatum	Hypertension				Snake bite	Snake bite
	Jaundice					
	Wounds					
Rhynchosia minima	Snake bite					Anti-acid
Sarcocephalus latifolius (Syn. *Nauclea latifolia*)	Malaria	Malarial fever	Headache,cough			Tapeworms
	Jaundice	Headache	Antihypertensive			Dysentery
	Diabetes	Cough	Kidney disorders			Cough
	Stomachache	Hypertensive				Abdominal pain
	Acid reflux	Kidney disorders				
		Dysentery				
		Abdominal pain				
Sclerocarya birrea subsp.caffra	Jaundice	Dysentery	Suleiman (2015)		Dysentery	Stomachache
	Diarrhoea	Diarrhoea			Diarrhoea	Diarrohea
	Stomachache	Diabetes				
Senna italica	Dysentery			Constipation		Rheumatic pain
	Laxative					
	Eczema					
Senna occidentalis	Diabetes	Backache	Backache	Diabetes	Jaundice	Jaundice
	Eczema	Hypertension	Hypertension	Gonorrhoea		
		Malaria		Intestinal ulcer		
		Dysentery				
		Jaundice				
Senna obtusifolia	Jaundice	Jaundice	Jaundice		Jaundice	Constipation
	Eczema					Ringworm
						Wound[4]
Setaria acromelaena	Evil eye					
Solanum dubium	Jaundice					

TABLE 5. Cont.

Plant name	Disease treated	Suleiman (2015)	El-Kamali (2009)	Doka & Yagi (2009)	Musa et al. (2011)	El Ghazali (1987), El Ghazali et al. (1994)
Sonchus cornutus	Malaria					
	Diabetes					
Striga hermonthica	Menstrualcramps		Diabetes			
	Diabetes					Leukoderma
Strychnos spinosa	Hypertension			Hypertension	Sexual debility	
Stylochiton grandis	Scorpion sting					Scorpion sting
Tamarindus indica	Malaria	Malaria		Food poisoning	Malaria	Malaria
	Kidney disorders	Malaria fever		Toothache	Fever	Constipation
	Evil eye	Cold and flu			Stomachache	
		Jaundice			Wound	
		Constipation				
Tephrosia uniflora	Urine retention				Diarrhoea	Headache
	Prostate					Tonic
Terminalia brownii	Jaundice					Diabetes
	Rheumatic pain					Cough
	Wound					
Terminalia laxiflora	Malaria				Cough, tonic	
Thymus vulgaris	Rheumatic pain					Flatulence
Tinospora bakis	Swelling		Abdominal pain			Wound[1]
	Snake bite					
	Stomachache					
	Malaria					
	Diabetes					
	Evil eye					
Tribulus terrestris	Kidney disorders					
	Diabetes					
Trigonella foenum-graecum	Uterus inflammation					Swellings
	Swellings					Haemorrhoids
	Foot pain					
Vangueria madagascariensis	Diabetes				Diabetes	
	Kidney disorders					
	Hypertension					
Ximenia americana	Rheumatic pain			Rheumatic pain		Measles
Ziziphus spina-christi	Stomachache	Swellings	Antispasmodic		Stomachache,	Swellings
	Dysentery	Antispasmodic	Fever		Dysentery	Constipation
	Evil eye	Constipation			Diarrhoea	Intestinal spasm
		Gonorrhoea			Malaria	Stomachache
					Urine retention	Gonorrhoea

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دراسة عرقية نباتية للأشجار والشجيرات الطبية في منطقة الرشاد - جنوب كردفان - السودان

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هذه هي أول دراسة كمية عرقية نباتية أجريت في مديرية الرشاد، جنوب كردفان، السودان. كان الهدف هو جمع وتحديد الأشجار والشجيرات المستخدمة في الدراسة الإثنية النباتية الكمية التي أجريت في منطقة الرشاد، من قبل السكان المحليين للأغراض الطبية وتلخيص المعرفة المحلية حول الأدوية العشبية التقليدية. تم الحصول على البيانات العرقية النباتية من خلال إجراء العديد من المسوحات العرقية والاستبيانات والمقابلات شبه المنظمة والملاحظات الميدانية والاستفسارات والتجمعات الجماعية من سبتمبر 2018 إلى يناير 2019. تم تحليل البيانات الإثنية النباتية من حيث قيمة الاستخدام (UV) والتكرار النسبي الاقتباس (RFC). تم إدراج مجموعه 56 شجرة وشجيرة تستخدم في الطب وتنتمي إلى 22 عائلة في هذه الدراسة. كانت العائلات الأكثر شيوعًا هي الفطريات (14٪) ، Combretaceae (8٪) ، و Malvaceae (5٪). من حيث شكل النمو، كانت 35 نوعا (61٪) من الأشجار و 21 (39٪) من الشجيرات. كانت الفاكهة هي التركيبات الأكثر شيوعًا المستخدمة في تحضير الأدوية العشبية (23٪) وكانت تُعطى عادة كمسحوق (13٪). الأنواع الأكثر استخدامًا على أساس الأشعة فوق البنفسجية من قبل المجتمع المحلي في منطقة الرشاد كانت على النحو التالي: *Adansonia digitata* L. لأمراض الزحار، تليها *Tamarindus indica* L. لعلاج الملاريا والحمى، *Balanites aegyptiacus* (L.) Delile لعلاج الأمعاء. الديدان، *Vangueria madagascariensis* JF Gmel و *Guiera senegalensis* JF Gmel لمشاكل الكلى، و *Ximenia americana* L. لأوجاع الأسنان.

كشفت هذه الدراسة عن معرفة عرقية نباتية محلية كبيرة وتفاعلات مباشرة بين الإنسان والنبات. يعد تسجيل الاستخدام المحلي للنباتات الخشبية أمرًا بالغ الأهمية لتحديد الأنواع المحتملة للتدجين في المستقبل.