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Medicinal plants of the Kamiesberg, Namaqualand, South Africa

J.M. Nortje, B.-E. van Wyk*

Department of Botany and Plant Biotechnology, University of Johannesburg, PO Box 524, Auckland Park 2006, Johannesburg, South Africa

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ABSTRACT

Ethnopharmacological relevance: Qualitative and quantitative data is presented that gives a new perspective on the traditional medicinal plants of the Khoisan (Khoe-San), one of the most ancient of human cultures. The data is not only of considerable historical and cultural value, but allows for fascinating comparative studies relating to new species records, novel use records and the spatial distribution of traditional plant use knowledge within the Cape Floristic Region.

Aim of the study: A detailed documentation and quantitative analysis of medicinal plants of the Kamiesberg area (an important Khoisan and Nama cultural centre) and their traditional uses, which have hitherto remained unrecorded.

Materials and methods: During four study visits to the Kamiesberg, semi-structured and structured interviews were conducted with 24 local inhabitants of the Kamiesberg, mostly of Khoisan decent. In addition to standard methodology, a newly developed Matrix Method was used to quantity medicinal plant knowledge.

Results: The Kamiesberg is an important center of extant Nama ethnomedicinal information but the knowledge is rapidly disappearing. Of a total of 101 medicinal plants and 1375 anecdotes, 21 species were recorded for the first time as having traditional medicinal uses and at least 284 medicinal use records were new. The relative importance, popularity and uses of the plants were quantified. The 97 newly documented vernacular names include 23 Nama (*Khoekhoegowab*) names and an additional 55 new variations of known names. The calculated Ethnobotanical Knowledge Index (EKI) and other indices accurately quantified the level of knowledge and will allow for future local, regional and even global comparisons.

Conclusion: The results showed that the Kamiesberg is an important focal point of Khoisan (Nama) traditional knowledge but that the medicinal plants have not yet been systematically recorded in the scientific literature. There are numerous new use records and new species records that are in need of scientific study. Comparative data is now available for broader comparisons of the pattern of Khoisan plants use in southern Africa and the study represents another step towards a complete synthesis of Cape Herbal Medicine.

1. Introduction

The Namaqualand region is situated along the west coast of South Africa and stretches from the Olifant's River mouth northwards to the Namibian border. This region of extreme summer aridity is part of the Succulent Karoo Biome and is famous for the spectacular display of annual flowers in the spring (August to September) and for the high levels of plant endemism, especially succulents (Mucina and Rutherford, 2006). It is also the traditional (original) home of the Nama people, the largest ethnic group of Khoisan speakers, who were historically concentrated in the highlands of the Kamiesberg area, from where they migrated seasonally to other parts of Namaqualand (Webly, 2007). The rich cultural heritage of the Nama people has been described by Schapera (1930) but the medical ethnobotany has not yet been systematically recorded. The paucity of information on Khoisan ethnobotany has also been commented on by Liengme (1983), Archer (1994) and Van Wyk (2002, 2008).

It is noteworthy that the very first ethnobotanical survey in South Africa was done in Namaqualand (Van der Stel, 1685). A few ethnobotanical anecdotes were also recorded by William Guybon Atherstone when he visited Namaqualand for five months in 1854–55 (cited in Harvey and Sonder, 1860, 1862, 1865). Important contributions to the ethnobotany of Namaqualand were made by Laidler (1928) and Archer (1982, 1990, 1994). Laidler (1928) described the medicinal practices and some medicinal plants of the region but unfortunately only common names were given for

Abbreviations: EKI, Ethnobotanical Knowledge Index; EKI(m), Ethnobotanical Knowledge Index for medicinal plants only; SPI, species popularity index.

E-mail address: bevanwyk@uj.ac.za (B.-E. van Wyk).
* Corresponding author. Tel.: +27 11 559 2412; fax: +27 11 559 2411.

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most of the plants mentioned. Some medicinal plants were also referred to in the studies by Archer (1982, 1990) that focused on the edible plants of the Kamiesberg. Whittaker and Archer (1985) listed a few plants in their study of health care in the Nourivier area of the Kamiesberg. The general ethnobotany of the Richtersveld (including medicinal plants) was the subject of an MA thesis by Archer (1994). The Richtersveld is a mountain desert area located in the extreme north-western corner of South Africa (Odendaal et al., 2007). A few useful plants were also included in the review of early explorers by Skead (2009) and in wild flower guides to Namaqualand (Le Roux and Wahl, 2005; Manning, 2008).

Despite all these publications, information on the medicinal plants of Namaqualand is very incomplete and in urgent need of documentation, given the fragility of the oral-traditional knowledge system. Since the Kamiesberg is an important centre of Nama traditional knowledge, this study was aimed at systematically recording the medicinal uses of plants in the Kamiesberg area.

2. Materials and methods

2.1. Study area

The survey was conducted in four villages in the Kamiesberg, Namaqualand, Northern Cape Province of South Africa, namely Kamieskroon, Nourivier, Leliefontein and Paulshoek (Fig. 1). Namaqualand was defined in the early travel records as the area in which the Nama people lived (Van der Stel 1685; Skead, 2009). Webly (2007) suggested that there was a seasonal migration cycle in Namaqualand, with people and their livestock moving between the mountainous region of the Kamiesberg and the plains (Sandveld). It is known that the Nama people were largely concentrated in the Kamiesberg (Whittaker and Archer, 1985). The Kamiesberg area represents the highest altitude region in Namaqualand and most of it is covered with fynbos and renosterveld, thus representing an outlying island of the Fynbos Biome within the Succulent Karoo (Mucina and Rutherford, 2006). It is situated in the so-called *Hardeveld* or *Klipkoppe* vegetation unit of Namaqualand and is known as the Kamiesberg Centre of endemism (KBC) because of the high number of endemic species (Van Wyk and Smith, 2001; Mucina and Rutherford, 2006). The Kamiesberg lies to the east of Kamieskroon and extends southwards for a distance of about 60 km (Fig. 1).

2.2. Data collection and participants

All the ethical guidelines outlined in the latest (2008) version of the International Society of Ethnobiology (2006) were strictly adhered to, including the principle of educated prior informed consent (with explicit permission to use all photographs, personal details and ethnobotanical information for scientific theses and publications). This study was also formally approved by the Science Faculty Ethics Committee of the University of Johannesburg. Over the last 30 years, several scientific studies have been conducted in the Kamiesberg (especially by scientists from the University of Cape Town) so that the inhabitants of the area were already familiar with scientific research methodologies.

A total of 24 participants contributed to this study. Their dates of birth, geographical origin and source(s) of traditional knowledge are given in Table 1. Most of the participants were elderly people of Nama descent who still regularly use medicinal plants for self-medication. We were fortunate to have a day-long interview with Mr Gert Dirkse of Paulshoek, one of the last practicing *bossiedokters* (traditional healers) of the Kamiesberg, before his death on the 7th of November 2010. We were able to capture at least a substantial part of his remarkable oral-traditional knowledge, which was obtained from his uncle, Willem (Barend) Engelbrecht (01-01-1915 to 02-03-1985), a legendary *bossiedokter* of the Kamiesberg. It is noteworthy that Mr Dirkse was completely illiterate, so that all his knowledge was gained through oral transfer and personal experience.

2.3. Methodology

The study was done in four phases. All interviews were conducted in Afrikaans, the mother tongue of the participants.

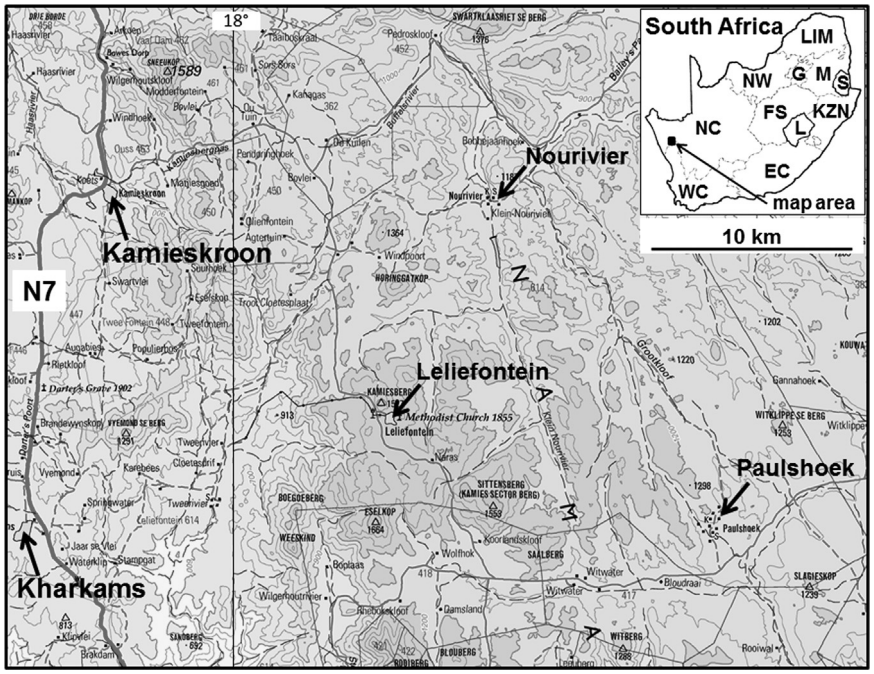

Fig. 1. Map of the study area in Namaqualand, South Africa, showing the locations of villages in the Kamiesberg.

Table 1
Participants that were interviewed about medicinal plant uses in the Kamiesberg area. Nicknames ("*klein name*") are considered essential for identifying a person in Namaqualand and are therefore given in brackets. Participants are listed alphabetically by their first names to simplify the abbreviations that are used in the text and in Tables 2 and 4.

Name of participant (abbreviation)	Date of birth (*date deceased)	Geographical origin	Origin of medicinal plant knowledge
Anna ("Wiet") Brand (AB)	16-10-1927	Nourivier	Grandmother and herbalist Elisabet Willems
Anna ("Boom") Stewe (AST)	04-09-1948	Leliefontein	Jan ("Bordhoed") Beukes, a herbalist from Leliefontein
Anna Jacoba ("Kotie") van Wyk (AW)	07-01-1928	Leliefontein	From her grandparents
Cerill Corjeus (CC)	29-11-1985	Paulshoek	From Jan (Dubbeljan) Josephs
Elizabeth ("Elsie/ Alla") Kardinal (EK)	09-09-1939	Leliefontein	From parents
Gertruida Wilhelmiena ("Truida") Brand (GB)	07-12-1958	Paulshoek	Personal experience, parents
Gert ("Joelk") Dirkse (GD)	10-03-1936 – *07-11-2010	Paulshoek	Willem ("Barend") Engelbrecht a legendary herbalist, personal experience
Gert ("Gertjie") Josephs (GJ)	30-03-1951	Paulshoek	Personal experience
Gertruida ("Trooi") Klaase (GK)	01-09-1932	Leliefontein	Grandfather was a herbalist (*bossiedokter*)
Jakobus ("Kosie/ Overall") Brand (JB)	31-10-1960	Nourivier	Mother and personal experience
Jan ("Dubbeljan") Joseph (JJ)	22-08-1947	Paulshoek	Personal experience
Jakobus ("Koos") Joseph (JAJ)	03-06-1943	Nourivier	Personal experience
Jakobus ("Kooitjie") Corjeus (JC)	22-09-1929 – *06-10-2010	Paulshoek	Father-in-law, herbalist: Willem ("Barend") Engelbrecht
Johanna ("Mariana") Lot (JL)	06-03-1964	Paulshoek	Personal knowledge
Jan ("Brood") van der Westhuizen (JvW)	12-07-1941	Paulshoek	From legendary herbalists in Paulshoek
Johanna ("Hanna") Willems (JW)	08-10-1931	Paulshoek	Father, Willem Dirkse, and personal experience
Lita Cole (LC)	01-08-1942	Kamieskroon	Personal experience
Morné Brand (MB)	14-09-2000	Nourivier	Grandmother and father
Magdalena ("Tarries") Joseph (MJ)	05-04-1938	Kamieskroon	Grandfather, Willem ("Oupa Platneus") Willemskat
Marietjie Goedeman (MG)	14-12-1936	Kamieskroon	Grandfather, Willem ("Oupa Platneus") Willemskat
Pieter ("Blink") Dirkse (PD)	08-06-1929	Paulshoek	Personal knowledge
Pieter Rooi (PR)	unknown	Leliefontein	Personal knowledge
Sors Cloete (SC)	02-03-1962	Paulshoek	Personal knowledge
Samuel ("Samie") van der Westhuizen (SW)	10-05-1931	Paulshoek	Personal knowledge

During the exploratory phase (February 2010), a broad survey was conducted in nine towns in Namaqualand (Vanrhynsdorp, Nuwerus, Garies, Kamieskroon, Leliefontein, Nourivier, Paulshoek, Soebatsfontein, Springbok and Steinkopf) in order to identify persons with traditional ethnobotanical knowledge. The Richtersveld was excluded because Archer (1994) already recorded the ethnobotany of this area. Several persons were interviewed and useful data on Namaqualand ethnobotany was obtained (Nortje and Van Wyk, unpublished data). This phase ended with an assessment of the most knowledgeable persons as well as a preliminary list of useful plants of Namaqualand. The survey showed that the Kamiesberg area is arguably the most important centre of Nama traditional information yet the traditional medicinal uses of plants is this area have remained practically unrecorded.

The structured interview phase (June 2010) was narrowly focused on the medicinal plants of the Kamiesberg. Four towns in the Kamiesberg were visited. Structured interviews were conducted with eight main participants from Kamieskroon, Leliefontein, Paulshoek and Nourivier. The interviews were facilitated by a selection of 85 photo images, showing the whole plant and details of the leaves, flowers or fruits. The selection of species was guided by experience from previous studies and the results of phase 1, as well as a careful consideration of literature data (e.g. Laidler, 1928; Archer, 1994). The aim of this phase was to record as many local medicinal plant species as possible, together with their traditional uses and vernacular names in Afrikaans and/or Nama. The Nama language is more correctly referred to as *Khoekhoegowab* (Haacke and Eiseb, 2002). Vernacular names were compared against those listed in Marloth (1917), Smith (1966), Powrie (2004) and the regional guides referred to above.

The confirmation phase (September 2010) consisted of field work in the Kamiesberg (mostly in the Leliefontein area), to identify and/or verify some of the plant species recorded during the structured interview phase. Photographs were taken and voucher specimens were collected (with permission from the landowners), especially of previously unrecorded species and species with doubtful identities. All voucher specimens are housed in the herbarium of the University of Johannesburg (JRAU). The identity of species were determined (or confirmed) at the National Herbarium in Pretoria (PRE). A preliminary checklist of 85 medicinal plant species of the Kamiesberg was compiled.

A feedback phase was implemented in May 2011 to share the main results of the study with the local communities and to get their permission to publish the information as presented here. During this last phase, several new and unexpected records were added, and some new participants were recruited. We applied the Matrix Method (De Beer and Van Wyk, 2011) to quantify the level of Kamiesberg ethnobotanical knowledge for future comparisons with other communities. A total of 16 persons from Leliefontein, Paulshoek, Nourivier and Kamieskroon participated in this quantification phase. The questionnaire included the list of 85 species compiled in the previous phase and a file with 85 "images" (i.e. photos or herbarium specimens enriched with photos) was used for the application of the Matrix Method. As explained in detail by De Beer and Van Wyk (2011), the Matrix Method allows for the calculation of an Ethnobotanical Knowledge Index (EKI), or in this case the Ethnobotanical Knowledge Index for medicinal plants only, EKI(m), which is used here for the first time [The study by De Beer and Van Wyk (2011) included all useful plants, while our study included only medicinal plants]. The method also allowed us to quantify the extent to which medicinal plants species are known by inhabitants of the Kamiesberg. This is calculated using the species popularity index or SPI (De Beer and Van Wyk, 2011). These calculations are explained in the captions of the relevant tables and electronic appendix. After this phase, the list of medicinal plants was enriched with a further 16 species, bringing the total in the checklist to 101 species (Table 2).

The following key references were used in compiling a comprehensive checklist of the plants and their uses but are not cited

Table 2
Medicinal plant species and a summary of their uses as recorded in the Kamiesberg area, Namaqualand (for a detailed account of all recorded anecdotes and associated key participants, as well as literature references, see electronic attachment).

Column 1: Species number; Newly recorded medicinal plants are given in bold text; newly recorded vernacular names are indicated by superscript[a] while new variations of known vernacular names are indicated by superscript[b]; voucher specimens (all in JRAU) are listed as follow: [NV]=Nortje and Van Wyk; [NVD]=Nortje, Van Wyk and De Beer; [PNV]=photographic vouchers; newly recorded Nama (Khoekhoegowab) names are given in underlined text. The Cultural Importance Index (CII), the Relative Frequency of Citation (RFC) and Species Popularity Index (SPI) are given as the third, second last and last statistic values [in square brackets];

Column 2: The total number of participants mentioning a medicinal use for the plant species; total number of use-records; rank of the species. The Index of Agreement on Remedies (IAR) is shown as the last statistic value [in square brackets].

Species name; family name; vernacular name(s); voucher specimens.	Summary of main medicinal use(s) recorded
1. [c]*Acorus calamus* L.; Acoraceae; *kalmoes* [NV105]; [CII=0.17]; [RFC=0.13]; [SPI=Not in Matrix]	The root is used for stomach ache, can be chewed for flatulence, and used for stomach ailments. [3,4,32]; [IAR=0.3]
2. [d]*Agathosma betulina* (P.J. Bergius) Pillans; Rutaceae; *boegoe, winkelboegoe* [b] [PNV50]; [CII=0.17]; [RFC=0.09]; [SPI=0.16]	Decoction used for colds, fever, influenza and for stomach ailments. [2,4,32]; [IAR=0.0]
3. *Aloe dichotoma* Masson; Asphodelaceae; *kokerboom* [PNV51]; [CII=0.35]; [RFC=0.35]; [SPI=0.72]	Root decoction used for treatment of pain, infertility in woman, stomach ache; leaf juice used to remove moles and to wean infants. [8,8,28]; [IAR=0.3]
4. [d]*Aloe ferox* Mill.; Asphodelaceae; *bitteraalwyn, aloe, winkelaalwyn* [b] [PNV52]; [CII=0.91]; [RFC=0.48]; [SPI=0.72]	Used for diabetes, stomach ailments, constipation, and treatment of retained placenta, as blood purifier, for wounds and sores, as veterinary medicine. [11,18,18]; [IAR=0.6]
5. ***Aloe microstigma*** Salm—Dyck subsp. ***microstigma***; *Asphodelaceae; bitteraalwyn* [b]*, aalwyn, veldaalwyn* [b]*, kamiesbergaalwyn, bergaalwyn* [b] [PNV53]; [CII=1.09]; [RFC=0.65]; [SPI=0.80]	Leaf juice used for diabetes, stomach ailments; as wash for acne, ringworm on the scalp, wounds and sores, to wean infants; as veterinary medicine for lice, ticks and as appetite stimulant. [15,26,13]; [IAR=0.6]
6. *Aloe variegata* L.; Asphodelaceae; *kanniedood, bontaalwyn, sandaalwyn* [b]*, wildeaalwyn* [b] [PNV54]; [CII=0.9]; [RFC=0.09]; [SPI=0.30]	Leaves use as a poultice on wounds. [2,2,34]; [IAR=1.0]
7. ***Anginon difforme*** (L.) B.L.Burtt; Apiacea; *t'noem t'nôrro* [a]**,** *eetlusbos* [a]*, pennebos* [a]*; wildeanys* [a]*, t'nôrro* [a] [NVD6], [NV19]; [CII=0.70]; [RFC= 0.22]; [SPI=0.34]	Leaf infusion used as appetite stimulant, for backache, earache, flatulence, insomnia, for magic, dizziness and in combination with *org* for tuberculosis. [5,13,23]; [IAR=0.4]
8. *Antizoma miersiana* Harv.; Menispermaceae; *bloubos* [a]*, swartstorm* (root)*, rambos* [a] [NVD4]; [CII=0.78]; [RFC=0.43]; [SPI=0.64]	To treat alcoholism, constipation, flatulence, stomach ailments, pains, backache and knee pain, veterinary medicine for various ailments. [10,19,17]; [IAR=0.6]
9. ***Arctotis laevis*** Thunb.; Asteraceae; *kankerbossie* [a] [NVD3]; [CII=0.26]; [RFC=0.17]; [SPI=0.32]	Leaf decoction used for stomach ache and stomach cancers (swelling), leaf compress for pains. [4,6,30]; [IAR=0.4]
10. [c]*Artemisia absinthium* L.; Asteraceae; *groenamara* [PNV56]; [CII=1.83]; [RFC=0.70]; [SPI=0.79]	Leaf infusion used in treatment of digestion problems, heartburn, stomach ache, nausea, diarrhoea, diabetes, high blood pressure, influenza, colds, pains such as backache; as a syrup used for coughs. [16,38,7]; [IAR=0.6]
11. [d]*Artemisia afra* Jacq. ex Willd.; Asteraceae; *wildeals,als, alsbos* [b] [PNV57]; [CII=1.17]; [RFC=0.48]; [SPI=0.68]	Leaves used as treatment for coughs, colds, fever, influenza, diabetes, stomach ache; as compress pain (inflammation), back ache. [11,28,11]; [IAR=0.6]
12. [c]*Artemisia vulgaris* L.; Asteraceae; *wonderkroon*[a] [NV106]; [CII=0.13]; [RFC=0.04]; [SPI=Not in matrix]	Used for stomach ache and fever and for infant flatulence. [1,3,33]; [IAR=0.0]
13. *Asclepias crispa* P.J.Bergius; Apocynaceae; *witvergeet* [b]*, witstorm* [a]*, witvergif* [b] [NV39]; [CII=2.13]; [RFC=0.78]; [SPI=0.85]	Root is chewed as magic medicine, for tooth ache; as decoction for flatulence, stomach ache, stomach cramps, menstrual pains, constipation, diarrhoea, chest ailments; as snuffed for headache, dizziness, 'clear thinking', as mixture for diabetes. [18,51,1]; [IAR=0.7]
14. [d]*Aspalathus linearis* (Burm.f.) R.Dahlgren; Fabaceae; *rooibos(tee)* [PNV58]; [CII=0.44]; [RFC=0.39]; [SPI=0.59]	Used for chest troubles, as appetite stimulant, infusion with *jantjiebêrend* for high blood pressure, for heartburn and constipation. [9,10,26]; [IAR=0.6]
15. *Ballota africana* (L.) Benth.; Lamiaceae; *kattekruid, oulap* [a] [PNV59]; [CII=2]; [RFC=0.87]; [SPI=0.97]	Compress on sick children's feet, on painful legs, inflamed joints, backache, head for headache, on cheek for toothache, on breasts for mastitis, for fever, wash for chilblained hands and feet, wounds; infusion used for stomach ache, to treat convulsions in infants, influenza, to wean infants, as cough syrup, ointment on sores, as poultice on boils. [20,46,5]; [IAR=0.6]
16. [d]*Bulbine frutescens* (L.) Willd.; Asphodelaceae; *geneesbos(sie)* [a] [PNV60]; [CII=1.17]; [RFC=0.52]; [SPI=0.54]	Flesh of leaf and leaf juice used for wounds, burn wounds, pains, sores, swellings, mouth ulcers, inflamed moles blisters, boils, acne abrasions and insect bites; used on sprained ankles. [12,27,11]; [IAR=0.0]
17. ***Bulbine praemorsa*** (Jacq.) Spreng.; Asphodelaceae; *slangkop* [a]*, katstert* [a] [NV35]; [CII=0.09]; [RFC=0.09]; [SPI=0.22]	Leaf juice used for insect bites, such as bee stings and for mosquito bites. [2,2,34]; [IAR=0.7]
18. *Bupleurum mundii* Cham & Schltdl.; Apiaceae; *leeuhout* [a] [NV107]; [CII=0.17]; [RFC=0.09]; [SPI=Not in Matrix]	Stem and leaf decoction is used for prostate problems and for flatulence, used for stomach ache and nausea. [2,4,32]; [IAR=1.0]
19. *Carpobrotus edulis* (L.) L.Bolus; Aizoaceae; *hotnotsvye, vyerank, t'nôbovye, vye* [PNV61]; [CII=1.78]; [RFC=0.65]; [SPI=0.88]	Leaf juice used for mouth sores (ulcers), oral thrush, sore throat, heartburn, externally on haemorrhoids, decoction for diabetes, wounds, sunburn, warts, diphtheria, cracked feet, as purgative, teething in infants, fruit's juice for stomach ulcers, stems chewed for stomach ailments, figs as appetite suppressant; leaf decoction for fevers and stomach ailments. [15,43,6]; [IAR=0.6]
20. *Cassytha ciliolate* Nees; Lauraceae; *bôjaantou* [a]*, bobbejaantou* [b]*, jakkalsgare* [a] [PNV62]; [CII=0.78]; [RFC=0.57]; [SPI=0.85]	Decoction used for pains, expel a retained placenta (woman's medicine), as wash for ringworm, stimulate hair growth, infusion used for flatulence, stomach ache, stomach ailments, fever, stimulate growth of babies, as snuff for headache. [13,19,17]; [IAR=0.4]
21. ***Cheilanthes induta*** Kuntze.; Sinopteridaceae; *varing* [b]*, safarie* [a] [NV32]; [CII=0.09]; [RFC=0.09]; [SPI=0.63]	Infusion used for nervous conditions ('*gebruik vir die senuwees*'), used for children's ailments. [2,2,34]; [IAR=0.0]
22. *Chironia baccifera* L.; Gentianaceae; *aambei(e)bos(sie), bitterbos* [NVD9]; [CII=1.26]; [RFC=0.87]; [SPI=0.63]	Leaves used as infusion, decoction and wash for haemorrhoids, bleeding haemorrhoids, for diabetes, backache, rheumatism, arthritis and woman ailments, menstrual pains, stomach ache, stomach ailments, children's ailments, as veterinary medicine. [20,28,11]; [IAR=0.6]
23. *Chrysocoma ciliata* L.; Asteraceae; *safhandjie* [a]*, vuurhoutjiebos* [a]*, mêtjiebos* [a]*, krakrakie* [a]*, teebos(sie)* [a]*, knoppiesopslag* [a] [NV24]; [CII=0.26]; [RFC=0.17]; [SPI=0.27]	Infusion used for flatulence, general malaise, heartburn, for diarrhoea, stomach ache; decoction used for stomach ailments. [4,6,30]; [IAR=0.0]
24. ***Conicosia elongata*** (Haw.) N.E. Br; Aizoaceae; *varkiesknol*, *varkieskanol* [b] [PNV64]; [CII=0.22]; [RFC=0.17]; [SPI=0.24]	Beer brewed and used medicinally for relaxation; leaf juice applied to white spots in neck; root used for stomach ailments and oral thrush. [4,5,31]; [IAR=0.3]
25. *Conyza scabrida* DC.; Asteraceae; *vleiwilger* [a]*, fonteinbos* [a]*, medisynebos* [a]*, slangbos* [a]*, meidebos, waterbos* [a] [NV25]; [CII=0.30]; [RFC=0.13]; [SPI=0.61]	Decoction used for backache, diabetes, woman's ailments, as wash for burning feet, for "godly illnesses", fevers and internal impurities. [3,7,29]; [IAR=0.0]

Table 2 (*continued*)

Species name; family name; vernacular name(s); voucher specimens.	Summary of main medicinal use(s) recorded
26. *Cotyledon orbiculata* L.; Crassulaceae; *pêpêbos, skapiebos* [a], *karretjiebos* [a], *rooi-randjie* [a] [PNV65]; [CII=0.44]; [RFC=0.30]; [SPI=0.61]	Leaves used for wounds, mouth sores (ulcers), on callus, on an open plantar wart (*soolvrat*), as compress on burn wounds, mouth ulcers and cracked lips, as poultice on thorns. [7,10,26]; [IAR=0.4]
27. *Crassula muscosa* L.; Crassulaceae; *akkedispoot* [b],*akkedisstert, akkedis(sie)(bos), hoenderpoot* [a], *vleggiesbos* [a] [NVD10]; [CII=0.65]; [RFC=0.39]; [SPI=0.53]	Infusion of the leaves and twigs used for stomach ailments, stomach ache, constipation, woman's ailments, diarrhoea, for digestion problems, as a wash for sores on the scalp. [9,15,21]; [IAR=0.5]
28. [c]*Datura stramonium* L.; Solanaceae; *stinkblaar, olieblaar* [b], *groen dissel* [a] [PNV67]; [CII=0.26]; [RFC=0.17]; [SPI=0.26]	Leaves used as compress on wounds, pain (inflammation), ground seeds used for boils, lumps in the neck and as ointment on burn wounds. [4,7,29]; [IAR=0.5]
29. *Dianthus micropetalus* Ser.; Caryophyllaceae; *grashout, bokhoutjie* [a], *angelier, wilde angelier, gras-angelier* [b] [PNV68]; [CII=0.17]; [RFC=0.13]; [SPI=0.19]	Used as magic, dry root used as snuff for stomach ailments, an infusion are used for stomach ailments**,** cause nausea. [3,5,31]; [IAR=0.8]
30. *Dicoma capensis* Less.; Asteraceae; *hosabi(e)s* [a],*hosabie* [a], *koorsbos(sie), hotnotskooigoed* [b], *wilde karmedik, hen-met-kuikens* [a], *karmadik, vrouensbos* [a], *kuniebos* [a], *baarbos* [a], *sandsalie* [a] [PNV69]; [CII=2.04]; [RFC=0.70]; [SPI=0.76]	Leaf decoction used for colds, fever, influenza, stomach ache, constipation, rheumatism kidney problems and backache, woman's ailments, to expel a retained placenta, bladder problems, as diuretic, flatulence and diabetes, for asthma, tuberculosis and cancer. [16,48,3]; [IAR=0.7]
31. *Diospyros austro-africana* De Winter var. *austro-africana*; Ebenaceae; *kraaibos, kraaibessiebos* [b] [PNV71]; [CII=0.87]; [RFC=0.74]; [SPI=0.82]	Used for constipation (as purgative), flatulence, colds, leaf infusion used treating over excretion of bile, kidneys problems, as diuretic, for stomach ache and diarrhoea. [17,20,16]; [IAR=0.7]
32. ***Diosma acmaeophylla*** Eckl. & Zeyh.; Rutaceae; *boegoe* [b], *t'adou* [a], *valsboegoe, t'ouda*[a] [NV40]; [CII=0.13]; [RFC=0.09]; [SPI=0.32]	Leaves used as syrup with *wildeals* for influenza, used for a bad cough, with mother's milk for infants with flatulence. [2,3,33]; [IAR=0.0]
33. [c]*Dittrichia graveolens* (L.) Greuter; Asteraceae; *kakiebos* [NV108]; [CII=0.09]; [RFC=0.04]; [SPI=Not in Matrix]	Leaf and twig infusion are used for diabetes and high blood pressure. [1,2,34]; [IAR=0.0]
34. *Dodonaea viscosa* Jacq. var *angustifolia* (L.f.) Benth.; Sapindaceae; *t'noubee, t'noubie, t'gnoubee* [b], *ysterhout, basterolienhout* [PNV72]; [CII=2.09]; [RFC=1.00]; [SPI=0.95]	Used for colds, influenza, fever, insomnia, as remedy for measles, chicken-pox; used as compress on head for headache; as a syrup for mucus on the lungs and chest problems. [23,48,3]; [IAR=0.8]
35. *Elytropappus rhinocerotis* (L.f.) Less.; Asteraceae; *renosterbos, t'nou* [a]; *t'kau* [a], *anosterbos*, *wyfie arnosterbos* [b], *bergrenoster* [b], *vaalrenoster* [b], *mannetjie t'nou* [b] [PNV73]; [CII=0.96]; [RFC=0.65]; [SPI=0.74]	Decoction used for flatulence, influenza, diabetes, for painful legs, as wash for burning feet, sores on the scalp, rheumatism; fresh leaves in shoes used for chilblained feet, swollen feet, sweaty feet; as compress for back ache and as glandular remedy for elderly. [15,22,15]; [IAR=0.5]
36. *Eriocephalus punctulatus* DC.; Asteraceae; *wilderoosmaryn, t'gibbie* [a] *kapokbos, t'gybie* [a] [NVD13], [NV26]; [CII=0.22]; [RFC=0.13]; [SPI=0.29]	Leaf infusion as wash for ringworm on scalp, for chest ailments, for back problems and excessive bile excretion. [3,5,31]; [IAR=0.3]
37. *Eriocephalus species;* Asteraceae; *wilderoosmaryn, roosmaryn, pokbos, veldroosmaryn* [b], *t'gibbiebos* [a], *t'ghybie* [a]; [CII=0.61]; [RFC=0.30]; [SPI=0.58]	Leaf decoction for ringworm on scalp, leaf ointment and wash used to treat hair loss, for back problems, excessive bile excretion, infusion used for colds, influenza, fever and dandruff. [7,14,22]; [IAR=0.6]
38. [c]***Eucalyptus sideroxylon*** A.Cunn.; Myrtaceae; *bloekom* [NV109]; [CII=0.22]; [RFC=0.17]; [SPI=Not in Matrix]	Used for colds, infusion for influenza, backache; decoction of leaves for influenza, coughs and fever. [4,6,30]; [IAR=0.2]
39. *Euphorbia mauritanica* L.; Euphorbiaceae; *melkbos, gifmelkbos*, *bittermelkbos* [PNV74]; [CII=0.48]; [RFC=0.30]; [SPI=0.67]	Latex used to remove warts and to remove moles, latex applied to spots of dark skin pigmentation. [7,11,25]; [IAR=0.8]
40. ***Euryops lateriflorus*** (L.f.) DC.; Asteraceae; *t'warra*[a], *rapuis(bos)* [b], *blourapuis* [a], *vaalrepuis* [a], *rapuis* [b], *stinkrapuis* [b] [NV110]; [CII=0.26]; [RFC=0.13]; [SPI=0.50]	The resin used as poultice on sores, boils, toothache; resin decoction for stomach ache. [3,4,32]; [IAR=0.3]
41. *Felicia* sp.; Asteraceae; *teebossie, vaalbossie* [b] [photo in Le Roux and Wahl, 2005]; [PNV107]; [CII=0.17]; [RFC=0.13]; [SPI=Not in Matrix]	Infusion used for blood in the stool, used for stomach ache, back problems. [3,5,31]; [IAR=0.8]
42. *Galenia africana* L.; Aizoaceae; *kraalbos* [PNV75]; [CII=1.09]; [RFC=0.74]; [SPI=0.84]	Infusion of leaves and twigs as wash for sores on the scalp (ringworm), dry scalp, wounds, and infusion is used as blood purifier; twig/ leaf placed in tooth for toothache; ointment for burn wounds. [17,25,14]; [IAR=0.8]
43. ***Galium capense*** Thunb.subsp. ***namaquense*** (Eckl. & Zeyh.) Puff; Rubiaceae; *rooistorm* [a], *rooibos* [a], *t'gaibos* [a] [NV29]; [CII=0.22]; [RFC=0.17]; [SPI=0.22]	Root decoction used for nausea, stomach ailments; as snuff for headache; root juice used for stomach ailments. [4,5,31]; [IAR=0.5]
44. *Galium tomentosum* Thunb.; Rubiaceae; *t'naaitand* [a], *rooistorm, jantjiegoub* [a], *rooihoutjie, doodlief* [a] [NV21]; [CII=0.70]; [RFC=0.52]; [SPI=0.55]	Used for woman's ailments, urinary tract infections, haemorrhoids; as snuff for stomach ache and headache; root juice swallowed for stomach ailments; root used for magic. [12,17,19]; [IAR=0.6]
45. *Gethyllis* sp.; Amaryllidaceae; *koek(oe)makranka, slaapblommetjie(s)* [a] [PNV76]; [CII=0.04]; [RFC=0.04]; [SPI=0.54]	Fruit tincture (brandy) used for stomach ailments. [1,1,35]; [IAR=0.0]
46. *Gomphocarpus cancellatus* (Burm.f.) Bruyns; Apocynaceae; *bergtontelbos, kliptontelbos* [b], *tontelbos*, *mannetjie tontelbos* [b], *regop tontelbos* [b] [PNV77]; [CII=0.26]; [RFC=0.17]; [SPI=0.32]	Leaf decoction used as wash for sores on the scalp, as ointment on pains; root decoction used for stomach ailments; root decoction used for dogs with a mouth ailment ("*beentong*"?). [4,6,30]; [IAR=0.4]
47. *Gomphocarpus fruticosus* (L.) Aiton f.; Apocynaceae; *gewone tontelbos* [b], *tontelbos* [NV111]; [CII=0.30]; [RFC=0.30]; [SPI=0.67]	Root used as snuff for headache, for children with convulsions, as veterinary medicine for dogs and chickens, for stomach ailments and body pains. [7,9,27]; [IAR=0.5]
48. *Gunnera perpensa* L.; Gunneraceae; *wildepampoen* [NV31]; [CII=0.09]; [RFC=0.09]; [SPI=0.28]	Dried plant in alcohol used to treat alcoholism ("*om hulle van die drank af te kry*"), causes nausea. [2,2,34]; [IAR=1.0]
49. ***Helichrysum rutilans*** (L.) D.Don; Asteraceae; *kooigoedbos* [NV43]; [CII=0.26]; [RFC=0.13]; [SPI=0.27]	Decoction used for woman's ailments, for a retained placenta; infusion used for kidney ailments, as a diuretic, backache and bladder problems. [3,5,31]; [IAR=0.0]
50. *Helichrysum odoratissimum* (L.) Sweet; Asteraceae; *kooigoed*, *hotnotskooigoed, slangbos* [a] [PNV78]; [CII=0.70]; [RFC=0.30]; [SPI=0.22]	Used for influenza, infusion used for kidney ailments, backache, stomach ailments, fever, woman's ailments, menstrual pains, to expel the placenta after labour, as poultice for burn wounds, pains. [7,16,20]; [IAR=0.2]
51. ***Hermbstaedtia glauca*** (J.C.Wendl.) Rchb. ex Steud.; Amaranthaceae; *bokhoutjie* [photo in Le Roux and Wahl, 2005]; [CII=0.35]; [RFC=0.13]; [SPI=0.15]	Used for stomach ache, fever; used with *grashoutjie* for stomach ailments and nausea, used for fever, backache. [3,8,28]; [IAR=0.4]
52. *Hoodia gordonii* (Masson) Sweet ex Decne.; Apocynaceae; *ghobba*, ghôba, *hoodia* [PNV79]; [CII=0.13]; [RFC=0.13]; [SPI=0.33]	Edible stem used as appetite stimulant, used for stomach ulcers, used for stomach ache. [3,3,33]; [IAR=0.0]
53. *Hydnora africana* Thunb.; Hydnoraceae; *jakkelskos, kanni(e), kynie* [b], *jakkalsblom* [b], *t'ienie* [b], *kanniebos* [b] [PNV80]; [CII=0.17]; [RFC=0.09]; [SPI=0.35]	Dried fruit pericarp (*skil*) is ground and used as an infusion for body pains, stomach ailments and stomach cramps. [2,4,32]; [IAR=0.0]
54. [b]*Leonotis leonurus* (L.) R.Br.; Lamiaceae; *wildedagga* [PNV81]; [CII=0.26]; [RFC=0.17]; [SPI=0.18]	Leaf infusion used for high blood pressure, influenza and diabetes; used as remedy for poison (scorpion stings and snake bites). [4,6,30]; [IAR=0.2]
55. ***Limeum africanum*** L.; Molluginaceae; *baarbos* [a] [PNV82]; [CII=0.22]; [RFC=0.09]; [SPI=0.19]	Decoction used for infants with convulsions, epilepsy, blood impurities, used for woman's ailments, for a retained placenta. [2,5,31]; [IAR=0.0]

Table 2 (*continued*)

Species name; family name; vernacular name(s); voucher specimens.	Summary of main medicinal use(s) recorded
56. ***Lobostemon paniculatus*** (Thunb.) H.Buek; Boraginaceae; *brandbos* [a]; *agtdaegeneesbos, agdaegenis* [b] [NVD11], [NV41]; [CII=0.52]; [RFC=0.30]; [SPI=0.29]	Powdered leaves used on wounds; as compress on burn wounds, wounds and sores; with other plants (unspecified) for the treatment of flatulence and stomach ailments. [7,12,24]; [IAR=0.6]
57. *Malva parvifolia* L.; Malvaceae; *kiesieblaar*; [NV116]; [CII=0.04]; [RFC=0.04]; [SPI=Not in Matrix]	Powdered leaves with Vaseline® used as ointment on sores. [1,1,35]; [IAR=0.0]
58. *Melianthus pectinatus* Harv.; Melianthaceae; *kriekie-roer-my-nie(t); kriekiebos; lidjiebos* [a], *kruidjie-roer-my-nie* [PNV83]; [CII=1.17]; [RFC=0.74]; [SPI=0.82]	Leaves as wash for painful legs and feet; compress on fractured legs, wounds, sores and abrasions; leaf infusion is used for influenza; root decoction used for urinary tract infections, as blood purifier; root snuff for headache. [17,26,13]; [IAR=0.6]
59. *Mentha longifolia* (L.) Huds.; Lamiaceae; *ballerja* [PNV84]; [CII=1.35]; [RFC=0.74]; [SPI=0.79]	Infusion for woman's ailments, influenza, flatulence, fever, infant ailments; ointment for painful legs; leaves as compress on pains, burning feet, sores; leaf decoction for diabetes, colds, stomach ailments. [17,31,10]; [IAR=0.6]
60. *Mentha spicata* L.; Lamiaceae; *kruistement* [PNV85]; [CII=0.30]; [RFC=0.26]; [SPI=0.45]	Infusion used for pains (inflammation), menstrual pains, influenza, thyroid gland; a sit bath is used for haemorrhoids. [6,8,28]; [IAR=0.3]
61. [c]*Nicotiana glauca* Graham; Solanaceae; *jantwaks, twaksboom* [b]; *twaksblaar* [b], *wilde twak, kersboom* [a] [PNV86]; [CII=0.83]; [RFC=0.61]; [SPI=0.73]	Leaf compress on pains, wounds, headache; used for epilepsy; as wash for painful legs; ear ache; as ointment for sores. [14,19,17]; [IAR=0.7]
62. ***Notobubon pearsonii*** (Adamson) Magee; Apiaceae; *orgbos* [a], *org* [a] [PNV44]; [CII=0.13]; [RFC=0.09]; [SPI=0.17]	Leaf decoction for the treatment of (as recovery tonic for) tuberculosis, used for asthma, for mucus on the lungs. [2,4,32]; [IAR=0.3]
63. *Olea europaea* subsp. *africana* (Mill.) P.S. Green; Oleaceae; *olienhout, olienhoutboom* [PNV87]; [CII=0.83]; [RFC=0.52]; [SPI=0.68]	Leaf infusion used for chest ailments, backache, flatulence, nausea, coughs, dizziness, severe bronchitis; leaf decoction used for heart ailments, stomach ailments; syrup for coughs and influenza; for sores on scalp, bark decoction for diabetes. [12,19,17]; [IAR=0.3]
64. *Oncosiphon suffruticosum* (L.) Källersjö; Asteraceae; *stinkkruid, stinkknoppies* [b] [PNV88]; [CII=1.09]; [RFC=0.78]; [SPI=0.81]	Leaves used for infant flatulence, colic, infant convulsions, children's ailments, to wean infants, for heartburn; root used for chest problems, compress on pains; used in a mixture for colds; as syrup for influenza and cough; leaf juice for nausea. [18,27,12]; [IAR=0.5]
65. ***Othonna daucifolia*** J.C.Manning & Goldblatt; Asteraceae; *sandrapuis* [a], *stinkrapuis* [a], *ripuis* [a], *repuis* [a], *harpuis* [a], *rapuis(bos)* [a] [NVD5]; [CII=0.17]; [RFC=0.13]; [SPI=0.45]	Resin as poultice on sores and on an open callus and as blister-plaster for thorns; decoction of the resin is used for stomach ailments. [3,4,32]; [IAR=0.3]
66. ***Othonna* sp. B** [=*O.arbuscula* (Thunb.) Sch.Bip.?]; Asteraceae; *repuisbos* [a], *bokrepuis* [a] [NV113]; [CII=0.09]; [RFC=0.09]; [SPI=0.26]	The resin used as poultice on sores and boils. [2,2,34]; [IAR=1.0]
67. *Parmelia* species; Parmeliaceae; *klipblom, heuningnessie* [a] [PNV89]; [CII=1.61]; [RFC=0.70]; [SPI=0.73]	Infusion used for back problems, stomach ache, retained placenta, infertile women, haemorrhoids, as blood purifier, for influenza, colds, infants with mouth sores, teething in babies; as wash for sores on the scalp; compress on sores; poultice on wounds; syrup for chest ailments. [16,38,7]; [IAR=0.5]
68. *Pelargonium antidysentericum* (Eckl. & Zeyh.) Kostel.; Geraniaceae; *popbos* [a] [PNV90]; [CII=0.17]; [RFC=0.13]; [SPI=0.06]	Used for woman's ailments, diarrhoea; root infusion for menstruation; root decoction for stomach and chest ailments. [3,4,32]; [IAR=0.0]
69. ***Pelargonium hypoleucum*** Turcz.; Geraniaceae; *rooirabas* [a] [NV33]; [CII=0.22]; [RFC=0.09]; [SPI=0.17]	Root decoction is used for diarrhoea, stomach ailments, backache, urinary tract infections and menstrual pains. [2,5,31]; [IAR=0.0]
70. *Pteronia camphorata* (L.) L.; Asteraceae; *wakkerbos* [a], *koorsbos* [b], *t'(j)nôrro (boegoe), t'ôrro(a)* [a], *t'gôrrôboegoe* [b] [NV36]; [CII=0.57]; [RFC0.30]; [SPI=0.38]	Leaves and twigs infused to alleviate toothache, flatulence, tuberculosis, general malaise; tonic for convalescent tuberculosis patients, rheumatism, as blood purifier; dry powdered leaves for earache, convulsions and epilepsy in adults; powdered roots used for infants with febrile convulsions. [7,16,20]; [IAR=0.4]
71. ***Pteronia cinerea*** L.f.; Asteraceae; *boegoe* [a], *silwerboegoe* [a] [NV42]; [CII=0.13]; [RFC=0.09]; [SPI=0.17]	Leaf infusion used for low back pain, diabetes; used medicinally with other shrubs (unspecified). [2,3,33]; [IAR=0.0]
72. *Quaqua mammillaris* (L.) Bruyns; Apocynaceae; *bokhoring, auroena* [b] [PNV91]; [CII=0.09]; [RFC=0.13]; [SPI=0.53]	Used for cancer, as an appetite stimulant. [3,3,33]; [IAR=0.5]
73. *Radyera urens* (L.f.) Bullock; Malvaceae; *wildepampoen* [photo in Le Roux and Wahl, 2005]; [CII=0.26]; [RFC=0.09]; [SPI=Not in Matrix]	Leaves as compress on pains, wounds and burn wounds. [2,6,30]; [IAR=0.6]
74. [c]*Ricinus communis* L.; Euphorbiaceae; *olieboom, kasterolie* [PNV92]; [CII=1.39]; [RFC=0.70]; [SPI=0.80]	Used for constipation (as purgative) for infants; an ointment of seeds used as compress on wounds, burns, thorns and boils; leaves as compress on pains, rheumatism, swellings, on the cheek for toothache; oil from ground seeds used as ointment on pains, sores, skin cream and mouth ulcers, cracked, sore lips. [16,33,8]; [IAR=0.7]
75. ***Rumex cordatus*** Desf.; Polygonaceae; *tongblaar* [a] [PNV93]; [CII=0.30]; [RFC=0.17]; [SPI=0.31]	Warm leaves used as compress on pains, inflamed joins, sores, acne; leaves used as poultice for facial pains. [4,7,29]; [IAR=0.7]
76. *Ruta graveolens* L.; Rutaceae; *wynruit, wynruik* [b] [PNV94]; [CII=1.22]; [RFC=0.65]; [SPI=0.85]	Leaf infusion used for woman's ailments, menstruation pains, colds, influenza, urinary tract infections, kidney ailments, nausea, diabetes, fever, intestinal parasites; as compress for low back pain and other pains. [15,28,11]; [IAR=0.6]
77. *Salix mucronata* Thunb.; Salicaceae; *wilgerboom, wilger, willer* [PNV95]; [CII=0.52]; [RFC=0.39]; [SPI=0.66]	Leaf infusions used for backache, haemorrhoids; leaf compress for headache, on stiff neck, pains; root decoction as veterinary medicine for sick dogs; leaves chewed for headache. [9,12,24]; [IAR=0.6]
78. *Salvia dentata* Aiton; Lamiaceae; *bloublomsalie, bergsalie, bêrsalie* [b], *salie, sandsalie* [PNV96]; [CII=1.39]; [RFC=0.65]; [SPI=0.80]	Leaves mixed with goat dung used for measles; infusion used for influenza, colds, fever; as wash for sores on children's scalp; used for pains; syrup used for influenza, diabetes and children's ailments. [15,32,9]; [IAR=0.7]
79. *Salvia lanceolata* Lam.; Lamiaceae; *bruinsalie* [photo in Le Roux and Wahl, 2005]; [CII=0.04]; [RFC=0.04]; [SPI=Not in Matrix]	Used for influenza. [1,1,35]; [IAR=0.0]
80. *Salvia verbenaca* L.; Lamiaceae; *sandsalie* [NV114]; [CII=0.04]; [RFC=0.04]; [SPI=Not in Matrix]	Used for influenza. [1,1,35]; [IAR=0.0]
81. *Sarcocaulon* species; Geraniaceae; *boesmanskers, t'(n)oenadoring, t'goenabos* [a] [PNV105]; [CII=0.30]; [RFC=0.26]; [SPI=0.40]	Decoction used to expel retained placenta of animals; used for haemorrhoids, stomach ache. [6,7,29]; [IAR=0.7]
82. *Sceletium tortuosum* (L.) N.E.Br.; Mesembryanthemaceae; *kougoed, springbok-slaai* [a], *springbok-kougoed* [b], *geelvoorskoot* [a] [PNV97]; [CII=1.91]; [RFC=0.83]; [SPI=0.91]	Leaves used for flatulence in infants, stomach ailments, stomach ache, nausea, stomach cramps, colic, will cause babies to sleep, children's ailments; psychological conditions; chewed for stomach ailments, headache; as sedative for hyperactive dogs. [19,47,4]; [IAR=0.7]
83. [a]*Schinus molle* L.; Anacardiaceae; *peperboom* [PNV98]; [CII=0.78]; [RFC=0.48]; [SPI=0.72]	

Table 2 (*continued*)

Species name; family name; vernacular name(s); voucher specimens.	Summary of main medicinal use(s) recorded
	Leaves as compress on painful legs, pains, backache wounds and sores on cheek for toothache, headache and fever; general malaise and fever; ointment on painful knees. [11,18,18]; [IAR=0.5]
84. *Searsia burchellii* (Sond. ex Engl.) Moffett; Anacardiaceae; *taaibos*, *t'ârra*[a], *gharrabos* [NV115]; [CII=0.52]; [RFC=0.35]; [SPI=Not in Matrix]	Used for influenza, colds, coughs, fever, stomach ailments and stomach cramps and stomach ache. [8,11,25]; [IAR=0.3]
85. *Senecio cinerascens* Aiton; Asteraceae; *vieroulap*, *oulap* [b], *handjiesbos* [PNV99]; [CII=1.26]; [RFC=0.74]; [SPI=0.80]	Leaf infusion for influenza, colds, high blood pressure, flatulence, constipation, pains and fever, stomach ailments and cramps; bruised leaves as compress on wounds, sores, pains, headache; as poultice on pains, burn wounds, sores, chilblained hands. [17,31,10]; [IAR=0.6]
86. ***Senecio scapiflorus*** (L'Hér.) C.A.Sm.; Asteraceae; *kapokbos* [a] [NV23]; [CII=0.30]; [RFC=0.22]; [SPI=0.33]	Leaf as wash for sores, ringworm on the scalp, flatulence in infants; used for children's ailments, such as measles. [5,7,29]; [IAR=0.3]
87. *Stoebe plumosa* (L.) Thunb.; Asteraceae; *hotnotswortel* [a], *vleirenosterbos* [a], *kooigoed*, vaal-*t'knou* [a], *berg-t'(k)nou* [NV34]; [CII=0.35]; [RFC=0.30]; [SPI=0.34]	Used as decoction for pain; leaf infusion for backache, kidney problems, children's ailments; as ointment for woman's ailments. [7,8,28]; [IAR=0.4]
88. *Silene burchellii* Otth; Caryophyllaceae [NV28]; [CII=0.04]; [RFC=0.04]; [SPI=0.07]	The plant is used in the same way as *witvergeet*, as snuff. [1,1,35]; [IAR=0]
89. ***Solanum guineense*** L.; Solanaceae; *koosbasterblaar* [a] [NVD17]; [CII=0.04]; [RFC=0.04]; [SPI=0.08]	Ointment of the leaves used for sores [her grandmother called it "*ouma se groen salf*" ("grandma's green ointment")]. [1,1,35]; [IAR=0]
90. *Solanum tomentosum* L.; Solanaceae; *tandpynbossie* [a], *bitterappeltjie* [b], *nasgal*, *bessiebos* [b], *bitterbessie* [b] [NV46]; [CII=0.22]; [RFC=0.17]; [SPI=0.28]	The fruit is used for toothache; root used as snuff and medicinally used for haemorrhoids; ointment used for acne. [4,5,31]; [IAR=0.3]
91. *Stachys rugosa* Aiton; Lamiaceae; *koorsbos*, *bergsalie* [b], *stinkkoorsbos*, *stinkbos* [a] [NV27], [NV49]; [CII=0.35]; [RFC=0.26]; [SPI=0.46]	Used for influenza; leaf decoction used for fevers, colds and influenza; infusion used for fever. [6,8,28]; [IAR=0.7]
92. *Sutherlandia frutescens* (L.) R.Br. Fabaceae; *kankerbossie*, *jantjie- bêrend*, *bitterkalkoentjie*, *kalkoentjiebos*, *koorsbos* [b] [PNV100], [PNV101]; [CII=2.17]; [RFC=0.91]; [SPI=0.92]	Leaf infusions and/or decoctions used for influenza, colds, diabetes, cancer, fever, pains and stomach ailments, stomach ache, flatulence in children, tuberculosis; leaf infusion can be applied around a wound, aid healing, leaf wash used for painful feet as remedy; decoction with hosabis used for the treatment of asthma. [21,50,2]; [IAR=0.7]
93. *Teedia lucida* (Sol.) Rudolphi; Scrophulariaceae; *klipdruiwe* [a] [photo in Le Roux and Wahl, 2005]; [PNV106]; [CII=0.09]; [RFC=0.04]; [SPI=Not in Matrix]	Infusion for woman's ailments, retained placenta and inflammation. [1,3,33]; [IAR=0.5]
94. *Tulbaghia alliacea* L.f.; Alliaceae; *wildeknoffel*, *knoffel* [NVD8]; [CII=0.65]; [RFC=0.39]; [SPI=0.46]	Leaf infusion used for fever, influenza, stomach ailments, flatulence, earache, woman's ailments; as snuff for headache. [9,15,21]; [IAR=0.4]
95. *Tylecodon wallichii* (Harv.) Toelken; Crassulaceae; *krimpsiek*, *t'nomsganna*, *kremsiek*, *krimpsiekkandelaar* [PNV102]; [CII=0.57]; [RFC=0.43]; [SPI=0.60]	Warm leaves used as poultice and blister-plaster for a broken-off thorn; leaves compress on sores, wounds and boils, whitlow finger. [10,13,23]; [IAR=0.8]
96. *Urtica urens* L.; Urticaceae; *branderneuker* [b], *brandneuker*, *brandnetel*, *brandneukel* [PNV103]; [CII=0.30]; [RFC=0.17]; [SPI=0.56]	Leaves used as snuff (smoke) to stop a bleeding nose; infusion to increase stamina; leaf infusion for gout. [4,5,31]; [IAR=0.3]
97. *Viscum capense* L.f.; Viscaceae; *groen voëlent* [b], *voëlent*, *taaibos voëlent* [b] [NVD7], [PNV104]; [CII=1.13]; [RFC=0.83]; [SPI=0.83]	Used for a retained placenta; stem infusion for colds, influenza, diabetes, appetite stimulant, stomach ailments, diarrhoea, flatulence, earache, backache, thyroid gland; as wash for haemorrhoids; as veterinary medicine. [19,28,11]; [IAR=0.5]
Unidentified species: 98. *vrouebos* (*Pelargonium* sp.?) *t'gou* [a] (*Elytropappus* sp.?—a shrub with sticky leaves and small pink flowers)	Leaf decoction with *klipblom* (*Parmelia* sp.) used for infertile woman; leaf decoction used for internal pains; infusion of the flowers used for bladder and kidney ailments, used for a retained placenta. [5,31]
99. *bitterkamroë*, *bitterpatat* (*Kedrostis* sp.?)	Infused for diabetes; decoction used for stomach ailments, constipation and flatulence (*vuil winde*); peel used for stomach ailments and body pains; Infusion in milk used as blood purifier. [7,29]
100. *stinkkamaroetjie*, *stinkkambroë* (*Kedrotis foetidissima* (Jacq.) Cogn.?) (Cucurbitaceae)	Used for stomach ailments and body pains; used as snuff and infusion for stomach complaints. [6,30]
101. *rivierkweek*	Used for woman's ailments. [1,35]

[a] Newly recorded vernacular name.
[b] New variation of known vernacular name.
[c] Exotic species.
[d] Indigenous species not occurring in Kamiesberg.

in the text. Some of them are cited in the electronic attachment. These are Anonymous (1998), Anonymous (2006), Anonymous (undated), Arnold et al. (2002), Kling (1923), Metelerkamp and Sealy (1983), Pappe (1868), Roberts (1990), Rood (1994), Scott and Hewett (2008), Shearing and Van Heerden (1994), Van den Eynden and Van Dammen (1993), Van Wyk and Albrecht (2008), Van Wyk et al. (2008), Van Wyk and Gericke (2000), Van Wyk et al. (2009), Von Koenen (2001), Von Reis Altschul (1973), Watt and Breyer-Brandwijk (1962) and Wileman (undated).

For comparison of our statistical data on the plant species with other quantification methods, we include in Table 2 calculations of the Cultural Importance Index (CII) of Tardío and Pardo de Santayana (2008) and the Index of Agreement on Remedies (IAR) of Trotter and Logan (1986). Comparisons of our statistics on ailments with previous quantification methods are made possible by the inclusion in Table 3 of values for the consensus factor (F_{ic}) of Trotter and Logan (1986) and the Fidelity Level (FL) of Friedman et al. (1986). These quantification methods and the way in which the various indices are calculated were reviewed by Heinrich et al. (2009) and Mutheeswaran et al. (2011) and are not repeated here.

3. Results and discussion

This study revealed that the Kamiesberg is an important center of Nama ethnomedical information. The remaining traditional knowledge of medicinal plant uses is mainly found amongst elderly people in the villages visited, which confirms the statement that ethnobotanical knowledge (especially about medicinal plants) is rapidly disappearing because plants are no longer of primary importance for the local health care needs. The urgent need to record indigenous plant knowledge was emphasized by the recent deaths of two of our participants (both *bossiedokters*), one of them being the very knowledgeable Mr Gert Dirkse.

Table 3
Summary of medical conditions treated with plants in the Kamiesberg and the plant species that are used. Ailments are ranked according to the number of anecdotes and the consensus factor (F_{ic}) is given to determine the consistency of informant's knowledge in treating a particular ailment [given in square brackets] respectivly. An evaluation of the importance of the plant species for each of the ailments is expressed as the number of anecdotes for that species (given in brackets) and by the "species therapeutic index" or STI. The STI for each particular ailment is calculated as the number of anecdotes for the species for that ailment divided by the total number of anecdotes for that ailment. The Fidelity Level (FL), calculated by dividing the number of use records per plant species per ailment by the total number of participants (Table 2) mentioning one or more medicinal use(s) for the species. The STI and FL values are also given in square brackets respectively. References explaining the various indices are given in the text.

Medical condition The total number of plant species, total number of anecdotes, the rank of the ailment and the concensus factor (F_{ic}), all given in square brackets [ ] respectively	**Plant species** (number of anecdotes) [STI],[FL]; The most frequently used species are shown in bold
Influenza [28,108,1]; [0.75]	*Agathosma betulina* (1) [0.01],[0.5]; *A. absinthium* (4) [0.04],[0.25]; *A. afra* (7) [0.06],[0.64]; *B. africana* (1) [0.01],[0.05]; *D. capensis* (9) [0.08],[0.56]; *D. acmaeophylla* (1) [0.01],[0.5]; ***D. viscosa* var. *angustifolia*** (19) [0.18],[0.83]; *E. rhinocerotis* (1) [0.01],[0.07]; *Eriocephalus* species (2) [0.02],[0.29]; *E. sideroxylon* (1) [0.01],[0.25]; *Helichrysum odoratissimum* (2) [0.02],[0.29]; *L. leonurus* (1) [0.01],[0.25]; *M. pectinatus* (1) [0.01],[0.06]; *M. longifolia* (7) [0.06],[0.41]; *M. spicata* (1) [0.01],[0.17]; *O. europaea* subsp. *africana* (1) [0.01],[0.08]; *O. suffruticosum* (1) [0.01],[0.06]; *Parmelia* species (2) [0.02],[0.13]; *R. graveolens* (6) [0.06]; *Salvia dentata* (10) [0.09],[0.67]; *Salvia lanceolata* (1) [0.01],[1]; *Salvia verbenaca* (1) [0.01],[1]; *Searsia burchellii* (3) [0.03],[0.38]; *S. cinerascens* (4) [0.04],[0.24]; *Stachys rugosa* (3) [0.03],[0.5]; *S. frutescens* (14) [0.13],[0.67]; *Tulbaghia alliacea* (2) [0.02],[0.22]; *V. capense* (2) [0.02],[0.11]
Pain, inflammation, arthritis (topical use – as ointment, poultice, compress or wash) [19,101,2]; [0.82]	*A. laevis* (1) [0.01],[0.25]; *Artemisia afra* (2) [0.02],[0.18]; *B. africana* (13) [0.13],[0.65]; *B. frutescens* (5) [0.05],[0.42]; *D. stramonium* (3) [0.03],[0.43]; *E. rhinocerotis* (3) [0.03],[0.2]; *Gomphocarpus cancellatus* (2) [0.02],[0.5]; *Helichrysum odoratissimum* (1) [0.01]; ***M. pectinatus*** (14) [0.14],[0.82]; *M. longifolia* (5) [0.05],[0.29]; *N.glauca* (11) [0.12],[0.79]; *O. suffruticosum* (1) [0.01],[0.06]; *Radyera urens* (2) [0.02],[1]; *R.communis* (13) [0.13],[0.81]; *R.cordatus* (4) [0.04],[1]; *R. graveolens* (2) [0.02],[0.13]; *Salix mucronata* (3) [0.03],[0.33]; *Schinus molle* (6) [0.06],[0.55]; *S. cinerascens* (10) [0.1],[0.59]
Stomach ailments (unspecified) [36,61,3]; [0.41]	*A. calamus* (1) [0.02],[0.33]; *A. betulina* (1) [0.02],[0.5], *A. ferox* (4) [0.07],[0.36]; *A. microstigma* subsp. *microstigma* (1) [0.02],[0.07]; *A. miersiana* (1) [0.02],[0.1]; *A. absinthium* (4) [0.07],[0.25]; *A. crispa* (6) [0.1],[0.33]; *B. africana* (1) [0.02],[0.05]; *C. edulis* (1) [0.02],[0.07]; *Cassytha ciliolata* (1) [0.02],[0.08]; *C. baccifera* (1) [0.02],[0.05]; *Chrysocoma ciliata* (1) [0.02],[0.25]; *C. elongata* (1) [0.02],[0.25]; *Crassula muscosa* (2) [0.03],[0.22]; *Dianthus micropetalus* (3) [0.05],[0.6]; *G. capense* subsp. *namaquense* (2) [0.03],[0.5]; *G. tomentosum* (2) [0.03],[0.17]; *Gethyllis* sp. (1) [0.02],[1]; *Gomphocarpus cancellatus* (1) [0.02],[0.25]; *Gomphocarpus fruticosus* (1) [0.02],[0.14]; *Helichrysum odoratissimum* (1) [0.02],[0.14]; *Hermbstaedtia glauca* (1) [0.02],[0.33]; *Hydnora africana* (1) [0.02],[0.5]; *L.paniculatus* (1) [0.02],[0.14]; *M. longifolia* (1) [0.02],[0.06]; *O.europaea* subsp. *africana* (2) [0.03],[0.17]; *Othonna daucifolia* (1) [0.02],[0.33]; *Parmelia* species (1) [0.02],[0.06]; *Pelargonium antidysentericum* (1) [0.02],[0.33]; *P.hypoleucum* (1) [0.02],[0.5]; ***S.tortuosum*** (7) [0.11],[0.37]; *Searsia burchellii* (1) [0.02],[0.13]; *S. cinerascens* (1) [0.02],[0.06]; *S.frutescens* (2) [0.03],[0.1]; *Tulbaghia alliacea* (2) [0.03],[0.22]; *V. capense* (1) [0.02],[0.05]
Stomach ache [27,60,4]; [0.41]	*A. calamus* (1) [0.02],[0.33]; *Aloe dichotoma* (1) [0.02],[0.13]; *Antizoma miersiana* (2) [0.03],[0.2]; *A. laevis* (2) [0.03],[0.5]; *Artemisia absinthium* (7) [0.11],[0.44]; *Artemisia afra* (3) [0.05],[0.27]; *A.vulgaris* (1) [0.02],[1]; ***Asclepias crispa*** (8) [0.13],[0.44]; *Ballota africana* (2) [0.03],[0.1]; *Bupleurum mundii* (1) [0.02],[0.5]; *Cassytha ciliolata* (1) [0.02],[0.08]; *C. baccifera* (1) [0.02],[0.05]; *Chrysocoma ciliata* (1) [0.02],[0.25]; *Crassula muscosa* (4) [0.06],[0.44]; *D. capensis* (4) [0.06],[0.25]; *Diospyros austro-africana* (1) [0.02],[0.06]; *Euryops lateriflorus* (2) [0.03]; *Felicia* sp. (2) [0.03],[0.67]; *Galium tomentosum* (3) [0.05],[0.25]; *Hermbstaedtia glauca* (2) [0.03],[0.67]; *Hoodia gordonii* (1) [0.02],[0.33]; *Parmelia* species (2) [0.03],[0.13]; Sarcocaulon sp. (1) [0.02],[0.17]; *Searsia burchellii* (1) [0.02],[0.13]; *Sceletium tortuosum* (4) [0.06],[0.21]; *Sutherlandia frutescens* (1) [0.02],[0.05]; *Viscum capense* (1) [0.02],[0.05]
Fever [22,59,5]; [0.64]	*Agathosma betulina* (1) [0.02],[0.5]; *Artemisia afra* (3) [0.05],[0.27]; *A. vulgaris* (1) [0.02]; *B. africana* (1) [0.02],[0.05]; *C. edulis* (1) [0.02],[0.07]; *C. ciliolata* (1) [0.02],[0.08]; *Conyza scabrida* (1) [0.02],[0.33]; ***D. capensis*** (12) [0.2],[0.75]; *D. viscosa* var. *angustifolia* (6) [0.1],[0.26]; *Eriocephalus* species (1) [0.02],[0.14]; *E. sideroxylon* (1) [0.02],[0.25]; *Helichrysum odoratissimum* (1) [0.02],[0.14]; *Hermbstaedtia glauca* (3) [0.05],[1]; *M. longifolia* (5) [0.08],[0.29]; *R. graveolens* (3) [0.05],[0.2]; *S. dentata* (3) [0.05],[0.2]; *S. tortuosum* (1) [0.02],[0.05]; *Schinus molle* (3) [0.05],[0.27]; *S. burchellii* (2) [0.03],[0.25];*Stachys rugosa* (4) [0.07],[0.67]; *S. frutescens* (4) [0.07],[0.19]; *Tulbaghia alliacea* (1) [0.02],[0.11]
Sores, abrasions, blisters, boils, warts, open callus, inflammed moles, cracked feet, open plantar wart (*soolvrat*), whitlow fingers [23,57,6]; [0.61]	*A. ferox* (1) [0.02],[0.09]; *A. microstigma* subsp. *microstigma* (1) [0.02],[0.07]; *B. africana* (2) [0.04],[0.1]; ***B. frutescens*** (11) [0.19],[0.92]; *C. edulis* (3) [0.05],[0.2]; *C. orbiculata* (3) [0.05],[0.43]; *Euryops lateriflorus* (2) [0.04]; *G. africana* (1) [0.02],[0.06]; *L.paniculatus* (4) [0.07],[0.57]; *Malva parvifolia* (1) [0.02],[1]; *M. pectinatus* (2) [0.04],[0.12]; *M. longifolia* (1) [0.02],[0.06]; *N. glauca* (2) [0.04],[0.14]; *O.daucifolia* (2) [0.04],[0.67]; *Othonna* sp. B (2) [0.02],[1]; *Parmelia* species (1) [0.02],[0.06]; *R. communis* (4) [0.07],[0.25]; *R. cordatus* (2) [0.04],[0.5]; *Schinus molle* (1) [0.02],[0.09]; *S. cinerascens* (2) [0.04],[0.12]; *S.scapiflorus* (1) [0.02],[0.2]; *S.guineense* (1) [0.02],[1]; *T.wallichii* (7) [0.12],[0.7]
Ringworm (also dry scalp, sores on scalp, hair loss, dandruff, stimulation of hair growth) [12,48,7]; [0.77]	*A. microstigma* subsp. *microstigma* (1) [0.02],[0.07]; *C. ciliolata* (3) [0.06],[0.23]; *Crassula muscosa* (1) [0.02],[0.11]; *E. rhinocerotis* (1) [0.02],[0.07]; *Eriocephalus punctulatus* (2) [0.04],[0.67]; *Eriocephalus* species (8) [0.15],[1.14]; ***G. africana*** (19) [0.4],[1.12]; *Gomphocarpus cancellatus* (2) [0.04],[0.5]; *O. europaea* subsp. *africana*

Table 3 (*continued*)

Medical condition The total number of plant species, total number of anecdotes, the rank of the ailment and the concensus factor (F_{ic}), all given in square brackets [ ] respectively	**Plant species** (number of anecdotes) [STI],[FL]; The most frequently used species are shown in bold
	(1) [0.02],[0.08]; *Parmelia* species (4) [0.09],[0.25]; *S. dentata* (2) [0.04],[0.13]; *S. scapiflorus* (3) [0.06],[0.6]
Colds [18,47,8]; [0.63]	*A. betulina* (1) [0.02],[0.5]; *A. absinthium* (4) [0.09],[0.25]; *A. afra* (3) [0.06],[0.27]; *D. capensis* (4) [0.09],[0.25]; *Diospyros austro-africana* (1) [0.02],[0.06]; ***D. viscosa* var. *angustifolia*** (9) [0.19],[0.39]; *Eriocephalus* species (1) [0.02],[0.14]; *E. sideroxylon* (1) [0.02],[0.25]; *M. longifolia* (2) [0.04],[0.12]; *O. suffruticosum* (1) [0.02],[0.06]; *Parmelia* species (1) [0.02],[0.06]; *R. graveolens* (2) [0.04],[0.13]; *S. dentata* (8) [0.17],[0.53]; *S.burchellii* (1) [0.02],[0.13]; *S. cinerascens* (2) [0.04],[0.12]; *Stachys rugosa* (1) [0.02],[0.17]; *S. frutescens* (4) [0.09],[0.19]; *V. capense* (1) [0.02],[0.05]
Flatulence (infants and adults) [24,47,8]; [0.50]	*A.calamus* (2) [0.04],[0.67]; *A. difforme* (3) [0.06],[0.6]; *A. miersiana* (1) [0.02],[0.1]; *Artemisia absinthium* (1) [0.02],[0.06]; *Artemisia vulgaris* (1) [0.02]; *A.crispa* (3) [0.06],[0.17]; *B. mundii* (1) [0.02],[0.5]; *C. ciliolata* (2) [0.04],[0.15]; *Chrysocoma ciliata* (1) [0.02],[0.25]; *D. capensis* (1) [0.02],[0.06]; *Diospyros austro-africana* (1) [0.02],[0.06]; *D. acmaeophylla* (1) [0.02],[0.5]; *E. rhinocerotis* (3) [0.06],[0.2]; *L. paniculatus* (1) [0.02],[0.14]; *M. longifolia* (1) [0.02],[0.06]; *O. europaea* subsp. *africana* (1) [0.02],[0.08]; *O.suffruticosum* (6) [0.13],[0.33]; *P. camphorata* (1) [0.02],[0.14]; ***Sceletium tortuosum*** (8) [0.17],[0.42]; *S. cinerascens* (1) [0.02],[0.06]; *S. scapiflorus* (1) [0.02],[0.2]; *Sutherlandia frutescens* (1) [0.02],[0.05]; *Tulbaghia alliacea* (3) [0.06],[0.33]; *V. capense* (1) [0.02],[0.05]
Unspecified [26,40,9]; [0.36]	*Aloe dichotoma* (1) [0.02],[0.13]; *A. microstigma* subsp. *microstigma* (1) [0.02],[0.07]; *A. laevis* (1) [0.02],[0.25]; *A. absinthium* (2) [0.05],[0.13]; *A. afra* (1) [0.02],[0.09]; *A. crispa* (1) [0.02],[0.06]; *Antizoma* miersiana (1) [0.02],[0.1]; *C. edulis* (1) [0.02],[0.07]; *C. ciliolata* (4) [0.1],[0.31]; *Chironia baccifera* (4) [0.1],[0.2]; *D. capensis* (1) [0.02],[0.06]; *Dodonaea viscosa* var. *angustifolia* (1) [0.02],[0.04]; *E. rhinocerotis* (1) [0.02],[0.07]; *Galium tomentosum* (2) [0.05],[0.17]; *Hydnora africana* (1) [0.02],[0.5]; *Leonotis leonurus* (2) [0.05],[0.5]; *M. pectinatus* (2) [0.05],[0.12]; *Mentha spicata* (1) [0.02],[0.17]; *Olea europaea* subsp. *africana* (1) [0.02],[0.08]; *Parmelia species* (1) [0.02],[0.06]; *P.cinerea* (1) [0.02],[0.5]; *Ruta graveolens* (3) [0.07],[0.2]; *Searsia burchellii* (1) [0.02],[0.13]; *S. frutescens* (1) [0.02],[0.05]; *Tulbaghia alliacea* (1) [0.02],[0.11]; *U. urens* (3) [0.07],[0.75]
Diabetes [19,40,9]; [0.54]	*A. ferox* (4) [0.1],[0.36]; *A. microstigma* subsp. *microstigma* (3) [0.08],[0.2]; *A. absinthium* (2) [0.05],[0.13]; *A. afra* (2) [0.05],[0.18]; *A. crispa* (1) [0.03],[0.06]; *C. edulis* (1) [0.03],[0.07]; *C. baccifera* (1) [0.03],[0.05]; *Conyza scabrida* (1) [0.03],[0.33]; *Dicoma capensis* (1) [0.03],[0.06]; *D. graveolens* (1) [0.03],[1]; *E. rhinocerotis* (3) [0.08],[0.2]; *Leonotis leonurus* (1) [0.03],[0.25]; *M. longifolia* (1) [0.03],[0.06]; *O. europaea* subsp. *africana* (1) [0.03],[0.08]; *Pteronia cinerea* (1) [0.03],[0.5]; *R. graveolens* (2) [0.05],[0.13]; *S. dentata* (1) [0.03],[0.07]; ***S. frutescens*** (8) [0.2],[0.38]; *V. capense* (5) [0.13],[0.26]
Headache [15,40,9]; [0.64]	***A. crispa*** (8) [0.2],[0.44]; *Ballota africana* (6) [0.15],[0.3]; *C. ciliolata* (1) [0.03],[0.08]; *D. viscosa* var. *angustifolia* (1) [0.03],[0.04]; *G. capense* subsp. *namaquense* (2) [0.05],[0.5]; *Galium tomentosum* (2) [0.05],[0.17]; *Gomphocarpus fruticosus* (3) [0.08],[0.43]; *M. pectinatus* (3) [0.08],[0.18]; *N. glauca* (3) [0.08],[0.21]; *R. communis* (2) [0.05],[0.13]; *Salix mucronata* (2) [0.05],[0.22]; *S tortuosum* (2) [0.05],[0.11]; *Schinus molle* (2) [0.05],[0.18]; *S. cinerascens* (1) [0.03],[0.06]; *Tulbaghia alliacea* (2) [0.05],[0.22]
Backache [24,38,10]; [0.38]	*A. difforme* (1) [0.03],[0.2]; *A. absinthium* (1) [0.03],[0.06]; *A. afra* (2) [0.08],[0.18]; *Ballota africana* (1) [0.03],[0.05]; *C. baccifera* (2) [0.08],[0.1]; *Conyza scabrida* (1) [0.03],[0.33]; *D. capensis* (1) [0.03],[0.06]; *E. rhinocerotis* (1) [0.03],[0.07]; *Eriocephalus punctulatus* (1) [0.03],[0.33]; *Eriocephalus* species (1) [0.03],[0.14]; *E. sideroxylon* (1) [0.03],[0.25]; *Felicia sp*. (2) [0.08],[0.67]; *H. rutilans* (1) [0.03],[0.33]; *Helichrysum odoratissimum* (1) [0.03],[0.14]; *H. glauca* (1) [0.03],[0.33]; *O. europaea* subsp. *africana* (1) [0.03],[0.08]; ***Parmelia* species** (6) [0.16],[0.38]; *Pelargonium hypoleucum* (1) [0.03],[0.5]; *P.cinerea* (1) [0.03],[0.5]; *R. graveolens* (2) [0.08],[0.13]; *Salix mucronata* (5) [0.13],[0.56]; *Schinus molle* (2) [0.08],[0.18]; *Stoebe plumosa* (1) [0.03],[0.14]; *V. capense* (1) [0.03],[0.05]
Constipation [12,36,11]; [0.69]	*A. ferox* (5) [0.14],[0.45]; *A. microstigma* subsp. *microstigma* (1) [0.03],[0.07]; *A. miersiana* (3) [0.08],[0.3]; *A. crispa* (1) [0.03],[0.06]; *A. linearis* (1) [0.03],[0.11]; *C. edulis* (3) [0.08],[0.2]; *Crassula muscosa* (2) [0.06],[0.22]; *D. capensis* (2) [0.06],[0.13]; ***Diospyros austro-africana*** (13) [0.36],[0.76]; *R. communis* (3) [0.08],[0.19];*S. tortuosum* (1) [0.03],[0.05]; *S. cinerascens* (1) [0.03],[0.06]
Wounds [20,32,12]; [0.39]	*A. ferox* (1) [0.03],[0.09]; *A. microstigma* subsp. *microstigma* (3) [0.09],[0.2]; *Aloe variegata* (2) [0.06],[1]; *Ballota africana* (1) [0.03],[0.05]; *B. frutescens* (1) [0.03],[0.08]; *C. edulis* (1) [0.03],[0.07]; *C. orbiculata* (1) [0.03],[0.14]; *D. stramonium* (1) [0.03],[0.14]; *Galenia africana* (1) [0.03],[0.06]; *L.paniculatus* (3) [0.09],[0.43]; *M. pectinatus* (1) [0.03],[0.06]; *N. glauca* (1) [0.03],[0.07]; *O. europaea* subsp. *africana* (3) [0.09],[0.25]; *Parmelia* species (1) [0.03],[0.06]; *R. urens* (2) [0.06],[1]; *R. communis* (2) [0.06],[0.13]; *Schinus molle* (1) [0.03],[0.09]; *S. cinerascens* (2) [0.06],[0.12]; *S. frutescens* (3) [0.09],[0.14]; *T. wallichii* (1) [0.03],[0.1]
Veterinary [10,29,13]; [0.68]	*A. ferox*(4) [0.14],[0.36]; ***A. microstigma* subsp. *microstigma*** (10) [0.34],[0.67]; *A. miersiana* (7) [0.24],[0.7]; *C. baccifera* (1) [0.03],[0.05]; *Gomphocarpus cancellatus* (1) [0.03],[0.25]; *Gomphocarpus fruticosus* (1) [0.03],[0.14]; *Salix mucronata* (1) [0.03],[0.11]; *S. dentata* (1) [0.03],[0.07]; *S. tortuosum* (1) [0.03],[0.05]; *V. capense* (2) [0.07],[0.11]
Haemorrhoids and bleeding haemorrhoids [9,24,14]; [0.65]	

Table 3 (*continued*)

Medical condition The total number of plant species, total number of anecdotes, the rank of the ailment and the concensus factor (F_{ic}), all given in square brackets [ ] respectively	**Plant species** (number of anecdotes) [STI],[FL]; The most frequently used species are shown in bold
	C. edulis (1) [0.04],[0.07]; ***C. baccifera*** (14) [0.58],[0.7]; *G. tomentosum* (2) [0.08],[0.17]; *M. spicata* (1) [0.04],[0.17]; *Parmelia* species (1) [0.04],[0.06]; *Salix mucronata* (1) [0.04],[0.11]; *Sarcocaulon* sp. (1) [0.04],[0.17]; *S. tomentosum* (1) [0.04],[0.25]; *V. capense* (1) [0.04],[0.05]
Pain, inflammation, arthritis, rheumatism, body pains (oral use) [15,24,14]; [0.39]	*Aloe dichotoma* (2) [0.08],[0.25]; *A. miersiana* (1) [0.04],[0.1]; *A. absinthium* (4) [0.08],[0.25]; *A. crispa* (1) [0.04],[0.06]; *C. ciliolata* (1) [0.04],[0.08]; *C. baccifera* (2) [0.08],[0.1]; *D. capensis* (1) [0.04],[0.06]; *Gomphocarpus fruticosus* (1) [0.04],[0.14]; *Hydnora africana* (1) [0.04],[0.5]; *M. spicata* (1) [0.04],[0.17]; *Parmelia* species (1) [0.04],[0.06]; *P. camphorata* (1) [0.04],[0.14]; *S. dentata* (1) [0.04],[0.07]; *Stoebe plumosa* (2) [0.08],[0.29]; ***S. frutescens*** (4) [0.17],[0.19]
Mouth ulcers (sores) [5,23,15]; [0.82]	*B. frutescens* (3) [0.13],[0.25]; ***C. edulis*** (10) [0.43],[0.67]; *C. orbiculata* (3) [0.13],[0.43]; *Parmelia* species (4) [0.17],[0.25]; *R. communis* (3) [0.13],[0.19]
Women ailments [15,21,16]; [0.30]	*C. ciliolata* (1) [0.05],[0.08]; *C. baccifera* (1) [0.05],[0.05]; *Conyza scabrida* (1) [0.05],[0.33]; *Crassula muscosa* (1) [0.05],[0.11]; *D. capensis* (2) [0.1],[0.13]; *G. tomentosum* (2) [0.1],[0.17]; *H.rutilans* (2) [0.1],[0.67]; *Helichrysum odoratissimum* (2) [0.1],[0.29]; *L.africanum* (1) [0.05],[0.5]; *M. longifolia* (1) [0.05],[0.06]; *Pelargonium antidysentericum* (1) [0.05],[0.33]; *R. graveolens* (2) [0.1],[0.13]; *Stoebe plumosa* (1) [0.05],[0.14]; *Teedia lucida* (1) [0.05],[1]; *Tulbaghia alliacea* (2) [0.1],[0.22]
Placenta (retained – animals and humans) [10,20,17]; [0.53]	*A. ferox* (1) [0.05],[0.09]; *C. ciliolata* (1) [0.05],[0.08]; *D. capensis* (1) [0.05],[0.06]; *H. rutilans* (1) [0.05],[0.33]; *Helichrysum odoratissimum* (2) [0.1],[0.29]; *L.africanum* (1) [0.05],[0.5]; *Parmelia* species (2) [0.1],[0.13]; ***Sarcocaulon* sp.** (5) [0.25],[0.83]; *Teedia lucida* (1) [0.05],[1]; V. capense (5) [0.25],[0.26]
Pediatric [11,17,18]; [0.38]	*Ballota africana* (2) [0.12],[0.1]; *C. ciliolata* (1) [0.06],[0.08]; *C. induta* (1) [0.06],[0.5]; *C. baccifera* (1) [0.06],[0.05]; *Crassula muscosa* (1) [0.06],[0.11]; *M. longifolia* (2) [0.12],[0.12]; *O. suffruticosum* (1) [0.06],[0.06]; *S. dentata* (1) [0.06],[0.07]; ***S. tortuosum*** (4) [0.24],[0.21]; *S. scapiflorus* (1) [0.06],[0.2]; *Stoebe plumosa* (2) [0.12],[0.29]
Burn wounds [9,16,19]; [0.47]	*B. frutescens* (4) [0.25],[0.33]; *C. orbiculata* (1) [0.06],[0.14]; *D. stramonium* (1) [0.06],[0.14]; *Galenia africana* (1) [0.06],[0.06]; *Helichrysum odoratissimum* (1) [0.06],[0.14]; ***L.paniculatus*** (3) [0.19],[0.43]; *R. urens* (2) [0.13],[1]; *R. communis* (1) [0.06],[0.06]; *S. cinerascens* (2) [0.13],[0.12]
Psychological conditions (magic medicine – "*paljas*") [5,15,20]; [0.71]	*A. difforme* (1) [0.07],[0.2]; ***A. crispa*** (10) [0.67],[0.56]; *Dianthus micropetalus* (1) [0.07],[0.2]; *G. tomentosum* (2) [0.13],[0.17]; *Helichrysum odoratissimum* (1) [0.07],[0.14]
Coughs and bronchitis [9,14,21]; [0.38]	*A. absinthium* (1) [0.07],[0.06]; *A. afra* (1) [0.07],[0.09]; *Ballota africana* (2) [0.14],[0.1]; *D. acmaeophylla* (1) [0.07],[0.5]; *E. sideroxylon* (1) [0.07],[0.25]; ***O. europaea* subsp. *africana*** (4) [0.29],[0.33]; *O. suffruticosum* (1) [0.07],[0.06]; *S. burchellii* (2) [0.14],[0.25]; *S. frutescens* (1) [0.07],[0.05]
Diarrhoea [9,14,21]; [0.38]	*A. miersiana* (1) [0.07],[0.1]; ***A. absinthium*** (4) [0.29],[0.25]; *A. crispa* (1) [0.07],[0.06]; *Crassula muscosa* (3) [0.21],[0.33]; *Chrysocoma ciliata* (1) [0.07],[0.25]; *Diospyros austro-africana* (1) [0.07],[0.06]; *Pelargonium antidysentericum* (1) [0.07],[0.33]; *Pelargonium hypoleucum* (1) [0.07],[0.5]; *V. capense* (1) [0.07],[0.05]
Kidney ailments (diuretic) [8,14,21]; [0.46]	***D. capensis*** (4) [0.29],[0.25]; *Diospyros austro-africana* (2) [0.14],[0.12]; *H.rutilans* (1) [0.07],[0.33]; *Helichrysum odoratissimum* (1) [0.07],[0.14]; *O. suffruticosum* (1) [0.07],[0.06]; *Parmelia* species (1) [0.07],[0.06]; *R. graveolens* (2) [0.14],[0.13]; *Stoebe plumosa* (2) [0.14],[0.29]
Appetite stimulant (infants and elderly) [5,13,22]; [0.67]	*A. difforme* (4) [0.31],[0.8]; ***A. linearis*** (5) [0.38],[0.56]; *Hoodia gordonii* (1) [0.08],[0.33]; *Quaqua mammillaris* (1) [0.08],[0.33]; *V. capense* (2) [0.15],[0.11]
Chest ailments [10,13,22]; [0.25]	*A. afra* (1) [0.08],[0.09]; *A. crispa* (1) [0.08],[0.06]; *A. linearis* (1) [0.08],[0.11]; *Ballota africana* (1) [0.08],[0.05]; *D.viscosa* var. *angustifolia* (2) [0.15],[0.09]; *Eriocephalus punctulatus* (1) [0.08],[0.33]; *O. europaea* subsp. *africana* (1) [0.08],[0.08]; *O. suffruticosum* (1) [0.08],[0.06]; ***Parmelia* species** (3) [0.23],[0.19]; *Pelargonium antidysentericum* (1) [0.08],[0.33]
Measles [4,10,23]; [0.67]	*D. viscosa* var. *angustifolia* (3) [0.3],[0.13]; *Galenia africana* (1) [0.1],[0.06]; ***S. dentata*** (5) [0.5],[0.33]; *S. scapiflorus* (1) [0.1],[0.2]
Nausea [8,10,23]; [0.22]	***A. absinthium*** (3) [0.3],[0.19]; *A. crispa* (1) [0.1],[0.06]; *B. mundii* (1) [0.1],[0.5]; *G. capense* subsp. *namaquense* (1) [0.1],[0.25]; *H. glauca* (1) [0.1],[0.33]; *O. europaea* subsp. *africana* (1) [0.1],[0.08]; *O. suffruticosum* (1) [0.1],[0.06]; *R. graveolens* (1) [0.1],[0.07]
Oral thrush [3,10,23]; [0.78]	***C. edulis*** (7) [0.7],[0.47]; *C. elongata* (1) [0.1],[0.25]; *Parmelia* species (2) [0.2],[0.13]
Toothache [8,10,23]; [0.22]	*A. crispa* (1) [0.1],[0.06]; *Ballota africana* (2) [0.2],[0.1]; *Euryops lateriflorus* (2) [0.2]; *Galenia africana* (1) [0.1],[0.06]; *P. camphorata* (1) [0.1],[0.14]; *R. communis* (1) [0.1],[0.06]; *Schinus molle* (1) [0.1],[0.09]; *S. tomentosum* (1) [0.1],[0.25]
Burning feet (compress) [4,9,24]; [0.63]	*Ballota africana* (1) [0.11],[0.05]; *Conyza scabrida* (1) [0.11],[0.33]; ***E. rhinocerotis*** (4) [0.44],[0.27]; *M. longifolia* (3) [0.33],[0.18]
Cancer [5,9,24]; [0.50]	*A. laevis* (2) [0.22],[0.5]; *A. crispa* (1) [0.11],[0.06]; *D. capensis* (1) [0.11],[0.06]; *Quaqua mammillaris* (1) [0.11],[0.33]; ***S. frutescens* (4)** [0.44],[0.19]
Earache [6,9,24]; [0.38]	*A. difforme* (1) [0.11],[0.2]; *Ballota africana* (1) [0.11],[0.05]; *N. glauca* (1) [0.11],[0.07]; ***P. camphorata*** (4) [0.44],[0.57]; *Tulbaghia alliacea* (1) [0.11],[0.11]; *V. capense* (1) [0.11],[0.05]
Impurities (internal) (purifier blood, body) [9,9,24]; [0]	*A. ferox* (1) [0.11],[0.09]; *C. ciliolata* (1) [0.11],[0.08]; *Conyza scabrida* (1) [0.11],[0.33]; *Galenia africana* (1) [0.11],[0.06]; *Helichrysum odoratissimum* (1) [0.11],[0.14]; *L. africanum* (1) [0.11],[0.5]; *M. pectinatus* (1) [0.11],[0.06]; *Parmelia* species (1) [0.11],[0.06]; *P. camphorata* (1) [0.11],[0.14]

Table 3 (*continued*)

Medical condition The total number of plant species, total number of anecdotes, the rank of the ailment and the concensus factor (F_{ic}), all given in square brackets [ ] respectively	**Plant species** (number of anecdotes) [STI],[FL]; The most frequently used species are shown in bold
Heartburn [5,9,24]; [0.50]	*A. absinthium* (1) [0.11],[0.06]; *A. linearis* (2) [0.22],[0.22]; *C. edulis* (1) [0.11],[0.07]; *Chrysocoma ciliata* (1) [0.11],[0.25]; ***O. suffruticosum*** (4) [0.44],[0.22]
Thorns (used as blister-plaster) [5,9,24]; [0.50]	*C. orbiculata* (1) [0.11],[0.14]; *O. daucifolia* (1) [0.11],[0.33]; *R. communis* (1) [0.11],[0.06]; *Schinus molle* (1) [0.11],[0.09]; ***T. wallichii*** (5) [0.56],[0.5]
Convulsions (infants) [5,8,25]; [0.43]	*Ballota africana* (1) [0.13],[0.05]; *Gomphocarpus fruticosus* (1) [0.13],[0.14]; *L. africanum* (1) [0.13],[0.5]; ***O. suffruticosum*** (4) [0.5],[0.22]; *P. camphorata* (1) [0.13],[0.14]
Insomnia [3,8,25]; [0.71]	*A. difforme* (1) [0.13],[0.2]; *D. viscosa* var. *angustifolia* (1) [0.13],[0.04]; ***S. tortuosum*** (6) [0.75],[0.32]
Stomach cramps [6,8,25]; [0.29]	*A. crispa* (2) [0.25],[0.11]; *Hydnora africana* (1) [0.13],[0.5]; *S. tortuosum* (2) [0.25],[0.11]; *S. burchellii* (1) [0.13],[0.13]; *S. cinerascens* (1) [0.13],[0.06]; *Tulbaghia alliacea* (1) [0.13],[0.11]
Acne, skin ailments [5,7,26]; [0.33]	*A. microstigma* subsp. *microstigma* (2) [0.29],[0.13]; *B. frutescens* (1) [0.14],[0.08]; *R. communis* (1) [0.14],[0.06]; *R. cordatus* (1) [0.14],[0.25]; *S. tomentosum* (2) [0.29],[0.5]
Warts (removal) [1,7,26]; [1.00]	*E. mauritanica* (7) [1]
Bladder problems (urinary tract infections) [6,6,27]; [0]	*D. capensis* (1) [0.17],[0.06]; *G. tomentosum* (1) [0.17],[0.08]; *H.rutilans* (1) [0.17],[0.33]; *M. pectinatus* (1) [0.17],[0.06]; *P.hypoleucum* (1) [0.17],[0.5]; *R. graveolens* (1) [0.17],[0.07]
Colic [2,6,27]; [0.80]	*O.suffruticosum* (2) [0.33],[011]; ***S. tortuosum*** (4) [0.67],[0.21]
High blood pressure [6,6,27]; [0]	*A. absinthium* (1) [0.17],[0.06]; *A. afra* (1) [0.17],[0.09]; *A.linearis* (1) [0.17],[0.11]; *D. graveolens* (1) [0.17]; *L. leonurus* (1) [0.17],[0.25]; *S. cinerascens* (1) [0.17],[0.06]
Menstrual pains (cramps) [6,6,27]; [0]	*A. crispa* (1) [0.17],[0.06]; *C. baccifera* (1) [0.17],[0.05]; *Helichrysum odoratissimum* (1) [0.17],[0.14]; *M. spicata* (1) [0.17],[0.17]; *P. hypoleucum* (1) [0.17],[0.5]; *R. graveolens* (1) [0.17],[0.07]
Tuberculosis [5,6,27]; [0.20]	*A. difforme* (1) [0.17],[0.2]; *D. capensis* (1) [0.17],[0.06]; *N.pearsonii* (1) [0.17],[0.5]; *P. camphorata* (1) [0.17],[0.14]; *S. frutescens* (2) [0.33],[0.1]
Weaning of infants [4,6,27]; [0.40]	*Aloe dichotoma* (1) [0.17],[0.13]; *A. microstigma* subsp. *microstigma* (2) [0.33],[0.13]; *Ballota africana* (2) [0.33],[0.1]; *O. suffruticosum* (1) [0.17],[0.06]
Bile (excessive) [4,5,28]; [0.25]	***A. crispa*** (2) [0.4],[0.11]; *Diospyros austro-africana* (1) [0.2],[0.06]; *Eriocephalus punctulatus* (1) [0.2],[0.33]; *Eriocephalus* species (1) [0.2],[0.14]
Chilblained hands and feet [3,5,28]; [0.50]	***Ballota africana*** (3) [0.6],[0.15]; *E. rhinocerotis* (1) [0.2],[0.07]; *S. cinerascens* (1) [0.2],[0.06]
Dizziness [2,5,28]; [0.75]	*A. difforme* (4) [0.8],[0.8]; *O. europaea* subsp. *africana* (1) [0.2],[0.08]
General malaise [4,5,28]; [0.25]	*A. absinthium* (2) [0.4],[0.13]; *Chrysocoma ciliata* (1) [0.2],[0.25]; *P. camphorata* (1) [0.2],[0.14]; *Schinus molle* (1) [0.2],[0.09]
Nervous conditions (aids relaxation) [4,5,28]; [0.25]	*C. induta* (1) [0.2],[0.5]; ***C. elongata*** (2) [0.4],[0.5]; *M. longifolia* (1) [0.2],[0.06]; *S. tortuosum* (1) [0.2],[0.05]
Sweaty feet [2,5,28]; [0.75]	*E. rhinocerotis* (3) [0.6],[0.2]; *O. suffruticosum* (2) [0.4],[0.11]
Mole removal [2,4,29]; [0.67]	*Aloe dichotoma* (1) [0.25],[0.13]; ***E. mauritanica*** (3) [0.75],[0.43]
Teething problems (babies) [2,4,29]; [0.67]	*C. edulis* (2) [0.5],[0.13]; *Parmelia* species (2) [0.5],[0.13]
Thyroid gland [2,4,29]; [0.67]	*M. spicata* (2) [0.5],[0.33]; *V. capense* (2) [0.5],[0.11]
Alcoholism [2,3,30]; [0.50]	*A. miersiana* (1) [0.33],[0.1]; *G. perpensa* (2) [0.67],[1]
Asthma [3,3,30]; [0]	*D. capensis* (1) [0.33],[0.06]; *N.pearsonii* (1) [0.33],[0.5]; *S. frutescens* (1) [0.33],[0.05]
Epilepsy [3,3,30]; [0]	*L.africanum* (1) [0.33],[0.5]; *N. glauca* (1) [0.33],[0.07]; *P. camphorata* (1) [0.33],[0.14]
"Godly illness" (unknown condition; "*goddelike siekte*" or "*ongesonde siekte*") [2,3,30]; [0.50]	*A. afra* (1) [0.33],[0.09]; *Conyza scabrida* (1) [0.33],[0.33]; *Helichrysum odoratissimum* (1) [0.33],[0.14]
Infertility in women [2,3,30]; [0.50]	*Aloe dichotoma* (2) [0.67],[0.25]; *Parmelia species* (1) [0.33],[0.06]
Insect bites (including bee stings) [2,3,30]; [0.50]	*B. frutescens* (1) [0.33],[0.08]; ***B. praemorsa*** (2) [0.67],[1]
Mastitis (breast tissue inflammation) and stimulation of milk flow (lactation) [1,3,30]; [1]	*Ballota africana* (3) [1],[0.15]
Mucus on lungs (pneumonia) [2,3,30]; [0.50]	***D. viscosa* var. *angustifolia*** (2) [0.67],[0.09]; *N.pearsonii* (1) [0.33],[0.5]
Bleeding (nose) [1,2,31]; [0]	*U. urens* (2) [1],[0.5]
Cracked lips [2,2,31]; [0]	*C. orbiculata* (1) [0.5],[0.14]; *R. communis* (1) [0.5],[0.06]
Diphtheria [1,2,31]; [1]	*C. edulis* (2) [1],[0.13]
Glands swollen [2,2,31]; [0]	*E. rhinocerotis* (1) [0.5],[0.07]; *D. stramonium* (1) [0.5],[0.14]
Indigestion [2,2,31]; [0]	*A. absinthium* (1) [0.5],[0.06]; *Crassula muscosa* (1) [0.5],[0.11]
Skin pigmentation [2,2,31]; [0]	*C. elongata* (1) [0.5],[0.25]; *E. mauritanica* (1) [0.5],[0.14]
Snuff [2,2,31]; [0]	*S. burchellii* (1) [0.5],[1]; *S. tomentosum* (1) [0.5],[0.25]
Stomach ulcers [2,2,31]; [0]	*C. edulis* (1) [0.5],[0.07]; *Hoodia gordonii* (1) [0.5],[0.33]
Tonic [2,2,31]; [0]	*P. camphorata* (1) [0.5],[0.14]; *U. urens* (1) [0.5],[0.25]
Aids [1,1,32]; [0]	*M. pectinatus* (1) [1],[0.06]
Appetite supresant [1,1,32]; [0]	*C. edulis* (1) [1],[0.07]
Chicken pox [1,1,32]; [0]	*D. viscosa* var. *angustifolia* (4) [1],[0.17]
Fractured legs [1,1,32]; [0]	*M. pectinatus* (1) [1],[0.06]
Gout [1,1,32]; [0]	*U. urens* (1) [1],[0.25]
Heart problems [1,1,32]; [0]	*O. europaea* subsp. *africana* (1) [1],[0.08]
Poisoning (snake bites, scorpion stings) [1,1,32]; [0]	*L. leonurus* (1) [1],[0.25]
Prostate problems [1,1,32]; [0]	*B. mundii* (1) [1],[0.5]
Psycoactive [1,1,32]; [0]	*S. tortuosum* (3) [1],[0.16]
Sexually transmitted disease [1,1,32]; [0]	*M. longifolia* (1) [1],[0.06]
Sore throat [1,1,32]; [0]	*C. edulis* (4) [1],[0.27]
Sprained ankle [1,1,32]; [0]	*B. frutescens* (1) [1], [0.08]
Sunburn [1,1,32]; [0]	*C. edulis* (1) [1],[0.07]

Table 3 (*continued*)

Medical condition The total number of plant species, total number of anecdotes, the rank of the ailment and the concensus factor (F_{ic}), all given in square brackets [ ] respectively	**Plant species** (number of anecdotes) [STI],[FL]; The most frequently used species are shown in bold
Worms (intestinal parasites) [1,1,32]; [0]	*R. graveolens* (1) [1],[0.07]

3.1. Medicinal plant species of the Kamiesberg

A total of 101 medicinal plant species was recorded in the Kamiesberg area during this study (Table 2), of which four are as yet unidentified. Authorities for species names are given in Table 2 and are not repeated in the text. The original data (electronic attachment 1) show a total of 1375 anecdotes of medicinal uses (including human, veterinary and magical applications). Species are listed alphabetically by their scientific names, together with the local vernacular name(s) in Afrikaans and/or Nama and all the medicinal uses as given by the participants (exactly as we have recorded them but directly translated into English). New vernacular names are supplied with a superscript 'a' or 'b': 'a' indicates common names never recorded in the literature before; 'b' indicates variations of known vernacular names. Newly recorded Nama names are underlined and new use records are emphasized by bold script.

Twenty species are here recorded for the first time as having traditional medicinal uses (indicated in bold in Table 2). These are *Aloe microstigma* subsp. *microstigma*, *Anginon difforme*, *Arctotis laevis*, *Bulbine praemorsa*, *Cheilanthes induta*, *Conicosia elongata*, *Diosma acmaeophylla*, *Euryops lateriflora*, *Galium capense* subsp. *namaquense*, *Helichrysum rutilans*, *Hermbstaedia glauca*, *Limeum africanum*, *Lobostemon paniculatus*, *Notobubon pearsonii*, *Othonna daucifolia*, *Othonna* sp. B, *Pelargonium hypoleucum*, *Pteronia cinerea*, *Rumex cordatus*, *Senecio scapiflorus* and *Solanum guineense*. As indicated in the table, a total of 14 species does not occur naturally in the Kamiesberg; eight are exotic (non-indigenous, indicated with a single asterisk), namely *Acorus calamus*, *Artemisia absinthium*, *Artemisia vulgaris, Datura stramonium*, *Dittrichia graveolens, Eucalyptus sideroxylon, Nicotiana glauca* and *Ricinus communis;* another six are indigenous to South Africa but do not occur naturally in Namaqualand (indicated with a double asterisk), namely *Agathosma betulina*, *Aloe ferox*, *Artemisia afra*, *Aspalathus linearis*, *Bulbine frutescens* and *Leonotis leonurus*. Products from these plants are either locally available at shops (*Agathosma*, *Aloe*, *Aspalathus*) or the plants are cultivated in gardens for medicinal use (*A. afra*, *B. frutescens* and *L. leonurus*).

3.2. Medicinal uses of plants in the Kamiesberg

A total of 284 of the medicinal uses listed in the electronic attachment (summarized in Table 2) appear to be new, having not yet been recorded in the scientific literature for the respective species. These new records are shown in bold in the electronic attachment. The number of anecdotes for each species is also given in Table 2, together with a rank based on the total number of anecdotes per species. The most frequently mentioned medicinal plants of the Kamiesberg were *Asclepias crispa* (51 anecdotes, rank 1), *Sutherlandia frutescens* (50, 2), *Dicoma capensis* (48,3), *Dodonaea viscosa* var. *angustifolia* (48,3), *Sceletium tortuosum* (47,4), *Ballota africana* (46, 5), *Carpobrotus edulis* (43,6), *A. absinthium* (38,7), *Parmelia* spp. (38,7), *R. communis* (33,8), *Salvia dentata* (32,9), *Mentha longifolia* (31,10) and *Senecio cinerascens* (31,10).

A total of 152 vernacular names are here recorded for the first time. Of these, 97 are totally new (indicated by superscript 'a') and 55 are variations of previously recorded (known) vernacular names (indicated by superscript 'b'). These new records include 23 new Nama (*Khoekhoegowab*) names: *t'noem t'nôrro*, *t'nôrro, hosabi(e)s*, *kunie(bos), t'adou*, *t'ouda, t'gnoubee*, *t'nou*, *t'kau, t'gybie*, *t'gibbie, t'ghybie, t'warra, t'gai(bos), t'naaitand, kynie, t'ienie, org, t'ôrro(a), t'gôrrô(boegoe), t'goenabos*, *t'ârra* and *t'knou.*

The medicinal plants of the Kamiesberg are still widely used for self-terminating and chronic ailments (Table 3)—more serious conditions are referred to the local clinics or hospitals. The same pattern was recorded by Whittaker and Archer (1985). Medicinal plants may be used as supportive treatment for serious ailments such as tuberculosis, cancer and diabetes, often after the patient has returned from the hospital or clinic. This classification of major and minor illnesses was also mentioned by Laidler (1928). In Table 3, 90 different ailments are listed, arranged by the total number of anecdotes recorded for that condition and its corresponding rank (given in square brackets, from 1 to 32). The most common indications are: influenza (180 anecdotes, ranked 1); pain, inflammation, arthritis (topical use) (101, 2); stomach ache (62, 3); stomach ailments (60, 4); fever (59, 5); sores and other skin conditions (57, 6); ringworm and various conditions of the hair and scalp (48, 7); colds (47, 8); flatulence (47, 8); diabetes (42, 9); headache (40, 9) and backache (38, 10).

The lack of specificity in Table 3 is noteworthy—it appears that there are numerous alternatives that can be used to treat the same ailment, perhaps as a result of local availability. More than 10 plant species are used for most of the frequently mentioned indications. An attempt is made in Table 3 to indicate the most popular species for each of the ailments, based on the number of anecdotes recorded—these are shown in bold. We introduce here the concept of the "species therapeutic index" (STI), calculated as the number of anecdotes of a given species for a particular ailment divided by the total number of anecdotes for that ailment (a value between zero and one). In the Kamiesberg, *D. viscosa* var. *angustifolia* is the most popular medicine for influenza with STI-values of 0.18 (19 anecdotes from a total of 108 for influenza). *Melianthus pectinatus* is the most popular species used for the topical treatment of pain, with a STI-value of 0.14 (14 out of 101 anecdotes). These low STI-values are typical for most of the ailments, supporting the stated lack of specificity. However, some plants are mainly used for particular indications (those with STI-values of 0.50 or more. Examples are *Chironia baccifera* (haemorrhoids, STI=0.58), *C. edulis* (oral thrush, STI=0.70), *S. dentata* (measles, STI=0.50), *S. tortuosum* (insomnia, STI=0.75; colic, STI=0.67), *A. crispa* (psychological conditions – magic, STI=0.67], *Tylecodon wallichii* (for blister-plasters, STI=0.56), *Oncosiphon suffruticosum* (convulsions, STI=0.5), *B. africana* (chilblained hands and feet, STI=0.6), *Euphorbia mauritanica* (removal of moles, STI=0.75), *Gunnera perpensa* (alcholism, STI=0.67), *B. praemorsa* (insect bites, STI=0.67), *D. viscosa* var. *angustifolia* (pneumonia, STI=0.67). Conditions treated with only two species (STI=0.50) are teething problems (*C. edulis* or *Parmelia* species), thyroid gland (*Mentha spicata* or *Viscum capense),* cracked lips (*Cotyledon orbiculata* or *R. communis*), swollen glands (*Elytropappus rhinocerotis* or *D. stramonium*), indigestion (*A. absinthium* or *Crassula muscosa*), skin pigmentation (*C. elongata* or *E. mauritanica*), as medicinal snuff (*Silene burchellii* or *Solanum tomentosum*), stomach ulcers (*C. edulis* or *Hoodia gordonii*) and as tonic (*Pteronia camphorata* or *Urtica urens*). Only one species (STI=1) was recorded for the following conditions:

Table 4
Matrix of 85 medicinal plants of the Kamiesberg, with scores reflecting 16 participant's knowledge of the identification each plant, it's name and medicinal use(s). Participants: AB=Anna ("Wiet") Brand; AST=Anna ("Boom") Stewe; AW=Anna Jacoba ("Kotie") van Wyk; CC=Cerill Corjeus; EK=Elizabeth ("Elsie/ Alla") Kardinal; GB=Gertruida Wilhelmina ("Truida") Brand; GK=Gertruida ("Trooi") Klaase; JB=Jakobus ("Kosie/ Overall") Brand; JL=Johanna ("Mariana") Lot; JvW=Jan ("Brood") van der Westhuizen; LC=Lita Cole; MB=Morné Brand; PD=Pieter ("Blink") Dirkse; PR=Pieter Rooi; SC=Sors Cloete; SW=Samuel ("Samie") van der Westhuizen. Explanation of the four digits in each cell: (1) does the participant know the plant?—score 1 or 0; (2) does the participant have a name for the plant?—score 2 or 0; (3) can the participant name a medicinal use for the plant? —score 3 or 0; (4) total score (out of 6); SPI=Species Popularity Index=ratio of total species score divided by maximum possible score for the species ($16 \times 6 = 96$); EKI(m)=Ethnobotanical Knowledge Index (medicinal)=ratio of total personal score divided by maximum possible score ($85 \times 6 = 510$).

Plant species		Participants																
		Senior citizens (age 55+)										Adults (age 20–54)					Child (age 11)	SPI
		AB	SW	AW	PD	GK	EK	JvW	LC	AST	PR	GB	JB	JL	SC	CC	MB	
1	*A. betulina*	0000	0000	0000	0000	0000	0000	0000	1236	1236	0000	0000	0000	0000	0000	1203	0000	**0.16**
2	*A. dichotoma*	1236	1203	1203	1203	1236	1203	1236	1203	1236	1203	1203	1236	1236	1236	1203	1203	**0.72**
3	*A. ferox*	1236	0000	1236	1236	0000	1236	1236	1236	1236	1203	1236	1236	0000	1236	1236	0000	**0.72**
4	*A. microstigma* subsp. *microstigma*	1236	1203	1236	1236	1236	1236	1236	1236	1236	1236	1203	1236	1203	1236	1001	1001	**0.80**
5	*A. variegata*	1203	1001	0000	0000	0000	1001	1203	1236	1203	0000	1203	1203	1001	1203	1001	1001	**0.30**
6	*A. difforme*	1236	1001	1001	0000	1001	1001	1236	1001	1236	0000	0000	1236	0000	1001	0000	1203	**0.34**
7	*A. miersiana*	1236	1203	0000	1236	1001	1203	1236	1203	1236	0000	1203	1236	1236	1203	1236	1203	**0.64**
8	*A. laevis*	1236	1001	1001	0000	0000	0000	1001	1001	1001	0000	1236	1236	0000	1236	1001	1001	**0.32**
9	*A. absinthium*	1236	1203	1236	1236	0000	1236	1236	0000	1236	1236	1236	1236	1236	1236	1236	1001	**0.79**
10	*A. afra*	1203	1236	1236	1203	0000	1236	1236	1236	1236	1236	1203	1236	1236	1001	1001	0000	**0.68**
11	*A. crispa*	1236	1236	1236	1236	1236	1236	1236	1203	1236	1236	1236	1236	1236	1236	0000	1001	**0.85**
12	*A. linearis*	1203	1203	1236	1203	1236	1236	1236	1236	1236	0000	1236	1203	0000	0000	1203	0000	**0.59**
13	*B. africana*	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1203	**0.97**
14	*B. frutescens*	1236	0000	1236	0000	0000	1236	1236	1203	1236	1203	0000	1236	1203	0000	1236	1001	**0.54**
15	*B. praemorsa*	0000	1001	1236	0000	0000	1001	1001	1203	1236	0000	0000	1001	0000	0000	1001	1001	**0.22**
16	*C. edulis*	1236	1203	1236	1203	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1203	1203	**0.88**
17	*C. ciliolata*	1236	1203	1236	1236	1236	1203	1236	1203	1236	1203	1236	1236	1236	1236	1203	1203	**0.85**
18	*C. baccifera*	1236	1001	1236	1203	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	0000	**0.63**
19	*C. ciliata*	1203	1001	1236	1203	1236	1203	1236	1203	1236	1203	1001	1236	1203	1236	1203	1001	**0.27**
20	*C. induta*	1001	1001	1001	0000	1236	1203	1203	1203	1236	0000	0000	0000	1001	1001	0000	0000	**0.63**
21	*C. elongata*	1203	1203	0000	1203	1203	1236	1236	1203	1236	1203	1203	1236	1203	1236	1203	1203	**0.24**
22	*C. scabrida*	1001	0000	1236	0000	1203	0000	1001	1203	1236	0000	0000	1001	0000	1001	1001	0000	**0.61**
23	*C. orbiculata*	1203	1203	0000	1236	1203	1203	1203	1236	1236	1203	1236	1203	1236	1236	1001	1001	**0.61**

Table 4 (*continued*)

Plant species		Participants															
		Senior citizens (age 55+)										Adults (age 20–54)					Child (age 11)	SPI
		AB	SW	AW	PD	GK	EK	JvW	LC	AST	PR	GB	JB	JL	SC	CC	MB	
24	*C. muscosa*	1236	1001	1001	1236	1001	1236	1236	1203	1236	1001	1001	1203	1001	1236	1203	0000	**0.53**
25	*D. stramonium*	1034	1001	1203	0000	0000	1001	0000	1001	1236	0000	000	1203	1001	1001	1203	1001	**0.26**
26	*D. micropetalus*	0000	0000	0000	0000	1203	0000	1236	1203	1236	0000	0000	0000	0000	0000	0000	0000	**0.19**
27	*D. capensis*	1236	0000	1236	1236	1236	1236	1236	0000	1236	0000	1236	1236	1236	1236	1236	1001	**0.76**
28	*D. austro- africana*	1236	1203	1236	1236	1236	1236	1236	1203	1236	1203	1236	1236	1236	1236	1203	1001	**0.82**
29	*D. acmaeophylla*	1001	1203	0000	0000	0000	1001	1034	1203	1236	1001	1001	1001	1203	1203	1203	1001	**0.32**
30	*D. viscosa* var. *angustifolia*	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1001	**0.95**
31	*E. rhinocerotis*	1203	1203	1034	1203	1236	1236	1236	1236	1236	1236	1203	1236	1236	1203	1203	1001	**0.74**
32	*E. punctulatus*	0000	0000	0000	0000	1001	1203	1236	0000	1236	0000	0000	1236	0000	1236	0000	0000	**0.29**
33	*Eriocephalus* spp.	0000	1203	1203	1203	1001	1203	1236	1236	1236	1203	1203	1203	1236	1236	1203	1001	**0.58**
34	*E. mauritanica*	1203	1203	1034	1203	1236	1236	1236	1203	1236	1203	1203	1203	1203	1236	1203	1203	**0.67**
35	*E. lateriflorus*	1236	0000	0000	1203	1236	1203	1203	1203	1203	1203	1203	1236	1203	1203	1203	0000	**0.50**
36	*G. africana*	1236	1203	1236	1236	1203	1236	1236	1236	1236	1203	1236	1203	1236	1236	1236	1203	**0.84**
37	*G. capense* subsp. *namaquense*	0000	0000	0000	0000	0000	1236	1236	0000	1236	0000	0000	0000	0000	1203	0000	0000	**0.22**
38	*G. tomentosum*	1236	1203	0000	1236	0000	1001	1236	1203	1236	0000	1236	1236	1203	1236	0000	1001	**0.55**
39	*Gethyllis* spp.	1203	1203	1034	1203	1203	1203	1236	1236	1203	1203	1203	1203	1203	1203	1203	0000	**0.54**
40	*G. cancellatus*	1236	0000	0000	1203	0000	0000	0000	1203	1236	0000	1203	1236	0000	1001	0000	1203	**0.32**
41	*G. fruticosus*	1203	1203	1236	1203	1203	1236	1236	1203	1236	1203	1203	1203	1236	1236	1203	1001	**0.67**
42	*G. perpensa*	0000	0000	1001	1203	1203	1203	1236	1001	1236	0000	0000	0000	0000	1001	0000	1203	**0.28**
43	*H. rutilans*	1034	0000	0000	0000	0000	1203	1236	1203	1236	0000	0000	1001	0000	1203	0000	0000	**0.27**
44	*H. odoratissimum*	0000	0000	0000	0000	0000	0000	1236	1203	1236	0000	1236	0000	0000	0000	0000	0000	**0.22**
45	*H. glauca*	0000	0000	0000	1001	1001	0000	1236	1236	0000	0000	0000	0000	0000	0000	0000	0000	**0.15**
46	*H. gordonii*	0000	1203	0000	1203	0000	1203	1236	1203	0000	0000	1203	0000	1203	1236	1001	1001	**0.33**
47	*H. africana*	1203	1203	0000	0000	1203	1001	1203	1203	1034	0000	1203	1203	1203	1203	1001	1001	**0.35**
48	*L. leonurus*	0000	0000	0000	0000	0000	1236	0000	1001	1236	0000	1001	0000	0000	0000	1203	0000	**0.18**
49	*L. africanum*	0000	0000	0000	0000	0000	0000	1236	1203	1203	0000	0000	0000	0000	1203	1203	0000	**0.19**

50	*L. paniculatus*	0000	0000	1236	0000	1001	1203	1236	1203	1236	0000	0000	0000	1001	1001	0000	1001	**0.29**
51	*M. pectinatus*	1236	1203	1236	1236	1236	1236	1236	1203	1236	0000	1236	1236	1236	1236	1236	1001	**0.82**
52	*M. longifolia*	1236	1236	1236	1203	1203	1236	1236	1236	1236	1203	1236	1236	1236	1236	0000	1001	**0.79**
53	*M. spicata*	1203	1001	1203	1236	0000	1203	1236	1203	1236	0000	1203	1203	0000	1236	0000	1001	**0.45**
54	*N. glauca*	1236	1001	0000	0000	1236	1236	1236	1236	1236	0000	1236	1236	1236	1236	1203	0000	**0.73**
55	*N. pearsonii*	0000	0000	0000	0000	0000	1236	1001	0000	1236	0000	1001	1001	0000	1001	0000	1236	**0.17**
56	*O. europaea* subsp. *africana*	1236	1203	1236	1203	1236	1203	1236	1236	1236	0000	1203	1236	1001	1236	1203	0000	**0.68**
57	*O. suffruticosum*	1236	1203	1236	1236	1236	1236	1236	1236	1236	1203	1203	1236	1236	1236	1230	1001	**0.81**
58	*O. daucifolia*	1203	1203	0000	1203	1001	1203	1203	1203	1236	0000	1203	1203	1203	1203	1203	1203	**0.45**
59	*Othonna* sp. B	1236	0000	0000	0000	0000	0000	1203	1203	1203	0000	1001	1236	1203	0000	0000	1203	**0.26**
60	*Parmelia* spp.	1236	1203	1236	1236	0000	1236	1236	1203	1236	0000	1236	1236	1236	1236	1203	0000	**0.73**
61	*P. antidysentericum*	0000	0000	0000	0000	0000	0000	0000	1001	1034	0000	1001	0000	0000	0000	0000	1001	**0.06**
62	*P. hypoleucum*	0000	0000	1001	0000	1001	0000	1236	1001	1236	0000	0000	0000	0000	0000	1001	0000	**0.17**
63	*P. camphorata*	0000	0000	1001	1203	1034	1236	1236	0000	1236	0000	1236	1001	0000	1203	0000	0000	**0.38**
64	*P. cinerea*	1001	0000	0000	0000	1001	1236	1001	1001	1034	0000	0000	1001	0000	1001	0000	0000	**0.17**
65	*Q. mammillaris*	1203	1203	1236	1203	1203	1203	1236	1203	1203	0000	1203	1203	1203	1236	1203	0000	**0.53**
66	*R. communis*	1236	1203	1236	1236	1236	1236	1236	1236	1236	0000	1236	1236	1236	1001	1236	1001	**0.80**
67	*R. cordatus*	0000	0000	1236	0000	1236	1236	1203	1203	1236	0000	0000	0000	0000	0000	0000	0000	**0.31**
68	*R. graveolens*	1236	1203	1236	1236	1236	1236	1236	1236	1236	1236	1203	1236	1236	1236	1203	0000	**0.85**
69	*S. mucronata* subsp. *mucronata*	1236	1001	1203	1236	1001	1203	1236	1203	1236	0000	1203	1236	1236	1236	1236	1001	**0.66**
70	*S. dentata*	1236	1203	1236	1236	1203	1236	1236	1203	1236	1001	1236	1236	1236	1236	1236	1001	**0.80**
71	*Sarcocaulon* spp.	1236	0000	0000	0000	0000	0000	1236	1236	1203	0000	1001	1203	0000	1236	1236	1001	**0.40**
72	*S. tortuosum*	1236	1236	1236	1236	1236	1236	1236	1236	1236	1203	1236	1236	1236	1236	1236	0000	**0.91**
73	*S. molle*	1203	1203	1236	1203	1236	1236	1203	1203	1236	1203	1236	1236	1236	1203	1203	1203	**0.72**
74	*S. cinerascens*	1236	1203	1236	1001	1236	1236	1236	1236	1236	1203	1236	1236	1236	1236	1001	1203	**0.80**
75	*S. scapiflorus*	0000	1001	1236	0000	1236	1236	1236	1001	1236	0000	0000	0000	0000	0000	0000	0000	**0.33**
76	*S. plumosa*	1034	0000	1001	0000	1236	0000	1236	1001	1236	0000	1001	1001	1236	1001	0000	0000	**0.34**
77	*S. burchellii*	0000	0000	0000	0000	0000	0000	1001	1001	1034	0000	1001	0000	0000	0000	0000	0000	**0.07**
78	*S. guineense*	0000	0000	0000	0000	1001	0000	0000	1236	0000	0000	1001	0000	0000	0000	0000	0000	**0.08**
79	*S. tomentosum*	1001	0000	1001	1203	0000	0000	1236	1001	1236	0000	1203	1001	0000	1203	1001	1001	**0.28**

Table 4 (*continued*)

	Plant species	Participants																	
		Senior citizens (age 55+)										Adults (age 20–54)					Child (age 11)		SPI
		AB	SW	AW	PD	GK	EK	JvW	LC	AST	PR	GB	JB	JL	SC	CC	MB		
80	*S. rugosa*	1236	1001	1001	0000	1001	1236	1236	1203	1236	0000	0000	1236	1236	0000	1001			**0.46**
81	*S. frutescens*	1236	1203	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	1001		**0.92**
82	*T. alliacea*	1236	1001	1236	0000	0000	1236	1203	1203	1236	0000	1001	1236	0000	1236	0000	1231		**0.46**
83	*T. wallichii*	1203	1203	1203	1203	1203	1236	1236	1203	1236	1203	1203	1236	1203	1203	1203	0000		**0.60**
84	*U. urens*	1203	1203	1236	1203	0000	1236	1203	1236	1236	1203	1203	1203	1203	1203	1203	1001		**0.56**
85	*V. capense*	1236	1236	1236	1203	1001	1236	1236	1203	1236	1236	1236	1203	1236	1236	1236	0000		**0.83**
	EKI(m)	**0.59**	**0.31**	**0.53**	**0.44**	**0.45**	**0.63**	**0.80**	**0.58**	**0.90**	**0.27**	**0.50**	**0.61**	**0.49**	**0.60**	**0.39**	1034		
	Average EKI(m)	**0.55**										**0.52**					**0.17**	**0.17**	

mastitis (*B. africana*), bleeding nose (*U. urens*), diphtheria (*C. edulis*), HIV-AIDS (*M. pectinatus*), appetite suppressant (*C. edulis*), chicken pox (*D. viscosa* var. *angustifolia*), fractured legs (*M. pectinatus*), gout (*U. urens*), heart problems (*Olea europaea* subsp. *africana*), intestinal parasites (*Ruta graveolens*), poisoning (*L. leonurus*), prostate problems (*Bupleurum mundii*), psychoactive (*S. tortuosum*), sexually transmitted disease (*M. longifolia*), sore throat (*C. edulis*), sprained ankle (*B. frutescens*) and sunburn (*C. edulis*).

The medicinal plants are mostly prepared as infusions (teas), rarely as decoctions. Other dosage forms include poultices, ointments, snuffs, liniments (washes), tinctures and syrups. In many instances the plants are used in combination with one another. A typical example is *D. viscosa* var. *angustifolia*, which is mostly used in combination with *S. dentata* and *S. frutescens*.

The plants may also be used in combination with animal products (Anna Stewe, pers. comm.; Gert Dirkse, pers. comm.), including porcupine stomach (the dried stomach, with its contents, of *Hystrix africaeaustralis*), the anal gland of the *t'ie* or aardwolf (*Proteles cristatus*), *klipsweet* (midget droppings, a dark brown, soft, tar-like substance scraped from the roofs of shallow caves), *hyraceum* (*dassiepis*; the excretions of the rock rabbit, *Procavia capensis*) (Olsen et al., 2008) and various rock salts (known locally as *bomeester*). The use porcupine stomach was also recorded by Laidler (1928) and Archer (1994).

3.3. Quantifying medicinal plant knowledge in the Kamiesberg

The Matrix Method was conceived as a way to systematically quantify (in matrix format) ethnobotanical knowledge so as to allow for comparisons of the level of knowledge still extant in communities from different geographical areas. The EKI values for 16 participants of the Kamiesberg area are shown in Table 4. Note that these EKI values are based only on medicinal plants [hence EKI(m) in Table 4], unlike the study of De Beer and Van Wyk (2011), where all useful plants (including those used for food and crafts) were included. The values ranged from 0.90 for the most knowledgeable participant (Anna Stewe) to 0.17 for a 10-year-old boy (Morné Brand), with an overall average of 0.52. (Unfortunately, the very experienced *bossiedokter*, Gert Dirkse, passed away in 2010). Senior citizens and adults have almost the same average EKI(m) values, namely 0.55 and 0.52. It is interesting to note the close similarity between these index values and those obtained in the Agter–Hantam by De Beer and Van Wyk (2011). From the 64 ethnobotanical relevant species recorded in the Agter–Hantam, 55 have medicinal uses. After recalculating the Agter–Hantam EKI values by excluding all non-medicinal uses, the EKI(m) values were 0.54 for senior citizens, 0.58 for adults and 0.26 for children, with an overall value of 0.50. The most knowledgeable person in the Agter–Hantam (Jan Baadjies, a *bossiedokter*) had an EKI (m) value of 0.92, while one of the lowest values was 0.19 (for a boy of 11 years old). The communities of the Kamiesberg and the Agter–Hantam are similar in being relatively isolated and still rely on local plants for medicinal and other uses. It may be interesting to do similar quantifications in other communities, especially to evaluate the effects of urbanization.

The best-known medicinal plants of the Kamiesberg (as judged by their SPI values) are *B. africana* (SPI value 0.97, rank 1), *D. viscosa* var. *angustifolia* (0.95, 2), *S. frutescens* (0.92, 3), *S. tortuosum* (0.91, 4), *C. edulis* (0.88, 5), *A. crispa* (0.85, 6), *C. baccifera* (0.85, 6), *R. graveolens* (0.85, 6), *Galenia africana* (0.84, 7), *V. capense* (0.83, 8), *Diospyros austro-africana* (0.82, 9), *M. pectinatus* (0.82, 9), *Cassytha ciliolata* (0.81, 10), *O. suffruticosum* (0.81, 10). It is interesting to note that several of these plants are also popular in the Agter-Hantam, where they have similar SPI values, such as *A. microstigma*, *S. frutescens*, *O. suffruticosum* and *D. viscosa* var. *angustifolia*.

The Species Popularity Index (SPI) differ from similar quantification indices (Heinrich et al., 2009) such as the CII (Cultural Importance Index) and the IAR (Index of Agreement on Remedies) by providing a simple but more effective assessment of indigenous knowledge about useful plants. In Tables 2 and 4, the general lack of agreement between the SPI values and the corresponding CII and IAR values for the species is noteworthy. Similarly, the total number of use records for each ailment (Table 3) differs markedly from the F_{ic} values. However, it is interesting to note that those species with the highest Species Therapeutic Index (STI) values (shown in bold in Table 3) have Fidelity Levels that are generally in agreement with the F_{ic} values for that particular ailment.

As discussed by De Beer and Van Wyk (2011), the Matrix Method has two main advantages. First, it ensures that the data is complete and accurate. The participants were all exposed to the same "flip-file" of herbarium specimens and photos, which included ALL of the Kamiesberg medicinal plants recorded up to that point (in phases 1 to 3). Unlike random questioning with the inevitable false negative use records (i.e. well-known plants that were momentarily forgotten by the informant), this systematic approach ensures that complete data is recorded. Furthermore, it serves as an *aid-mémoire* to older participants – typically those with the most knowledge and experience – who often tend to forget important facts due to their advanced age. In addition, these persons are often no longer mobile and are unable to walk long distances to point out the useful species. Another advantage is that the method is not limited by season and can be performed at any time of the year, even when the plants are dormant. Second, it accounts for all the logical steps in the sequence through which traditional knowledge is acquired. Children typically first become familiar with useful plants without necessarily knowing their names or uses. The next step is to recognize them by name, followed by details of their various uses. By limiting the quantification to use records, the total knowledge in the community may be under-estimated because familiarity with a particular useful plant and knowledge about the vernacular name (even in the absence of a use record) is not taken into account. In addition, the quantification of use records alone leads to a loss of valuable information and limits the possibility for further analyses (e.g. by comparing the level of knowledge amongst various age groups from different communities). The method is therefore highly suitable for evaluating the apparent loss of traditional plant knowledge by allowing for separate statistical analyses of the various steps through which knowledge is acquired. In this study, for example, the average index values for 16 participants were 0.73 for recognition ("do you know the plant?"), 0.61 for naming (do you have a name?) and 0.39 for providing medicinal use(s). It is interesting to note the close similarity between these values and those calculated from the Agter – Hantam data of De Beer and Van Wyk (2011), namely 0.73, 0.63 and 0.33 respectively. Note that the Agter – Hantam matrix allows us to recalculate the EKI and SPI indices for various use categories (e.g. medicinal plants, edible plants and craft plants). The method therefore provides exciting opportunities for broader comparisons of the spatial distribution of Khoisan ethnobotanical knowledge and a more detailed analysis of its perceived path towards extinction. Furthermore, it does not only give insights into the historical pattern of plant use in this unique cultural group but also allows for global comparisons between various cultural groups worldwide, as long as the same methodology is followed.

4. Conclusions

The traditional *materia medica* of the Kamiesberg comprises at least 101 plant species (and a small number of animal products and other items, not discussed in detail here). The data (number of anecdotes and SPI values) suggest that the following species are the most popular and commonly used traditional medicinal plants of the Kamiesberg: *Antizoma miersiana, A. absinthium, A. afra, A. crispa, B. africana, C. edulis, C. ciliolata, C. baccifera, D. capensis, D. austro-africanum, D. viscosa* var. *angustifolia, E. rhinocerotis, G. africana, M. longifolia, N. glauca, O. europaea* subsp. *africana, O. suffruticosum, Parmelia* spp., *R. communis, R. graveolens, S. dentata, S. tortuosum, S. cinerescens, S. frutescens* and *V. capense*. The system is dynamic and adaptive, as evidenced by the popular use of *A. afra* (a cultivated indigenous species) and non-indigenous species plants such as *A. absinthium, N. glauca, R. communis* and *R. graveolens*. The most common indications treated with medicinal plants are influenza, stomach ache, fever, unspecified stomach ailments, colds, flatulence, diabetes, headache and backache.

Our study suggests that the Matrix Method may be the most practical and useful approach for capturing and quantifying ethnobotanical knowledge at community level and that it has numerous advantages over less rigorous and less systematic methods. The EKI(m) values obtained indicate that the average value for a rural community should be in the region of 0.50 but it would be interesting to do wider comparisons. Knowledgeable persons (e.g. traditional healers; *bossiedokters*) typically have values above 0.80.

Our study has confirmed the paucity of published information on Nama medical ethnobotany—21 newly recorded medicinal plant species, 284 new use records and 97 new vernacular names (including 23 Nama names) became scientifically known for the first time. The death of two knowledgeable participants during this study highlights the urgent need for similar studies in other rural areas in southern Africa as contributions towards a more complete synthesis of Khoisan ethnomedicine.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.jep.2015.04.049.

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