Research article

Exploration of Ethnomedical Knowledge of 'Gowda community' of Sullia Taluk, Dakshina Kannada District, Karnataka, India

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(Received: December 2022 Revised: January 2023 Accepted: January 2023)

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ABSTRACT

Introduction and Aim: An ethnobotanical investigation of the Gowda community in the Sullia taluk of Dakshina Kannada district, Karnataka, India reveals the diversity of ethnomedicinal plants as well as the wealth of traditional medical knowledge. The Gowda community is one of the indigenous communities. Locals in the remote regions of Sullia Taluk still lack access to modern medicine, so they rely on traditional medicine for their healthcare.The aim of the present study was to examine traditional medical knowledge, record the significant knowledge and raise awareness of knowledge erosion.

Materials and Methods: Ethnomedicinal information gathered from traditional healers during semi-structured open-ended interviews. Various qualitative and quantitative indices were used for data analysis, including Cultural Importance Index (CI), Family Use Value (FUV), Family Importance Value (FIV), Percentage of habit used, Percentage of plant species used, and Consensus Value for Plant Part (CPP), Fidelity Level (FL), and Informants Consensus Factor (ICF).

Results: A total of 214 plant species from 113 genera and 51 families were recorded and assigned to 13 use categories for diseases. Skin disease has a high ICF value and 61 species extensively used to treat. High FL value plants of *Breynia vitis-idaea*, *Indigofera tinctoria*, *Plectranthus amboinicus, Sida alnifolia*, *Cynodon dactylon*, *Citrus limon*, and *Oryza sativa* are widely used for the treatment of various skin ailments.

Conclusion: Ethnobotanical data showed that the Gowda community has a rich knowledge of traditional therapies for many diseases whose skin problems are mainly treated by healers. The numerous ethnomedicinal plant species showed effective treatment of multiple skin diseases.

Keywords: Indigenous community; traditional healer; traditional medicinal knowledge; ethnobotanical data.

INTRODUCTION

Ethnobotany reveals the connection between plants and humans. The term 'ethnobotany' is frequently used in other words such as 'Traditional Knowledge' or 'Economic Botany'.The discipline of ethno botany explores how plants invariably affect the way of life of an ethnic group or community. Botanical ethnography also studies the positive and negative effects of plants, taboos, avoidance, nutrition, medicine, house-building, agricultural practices, and other household uses of plants in relation to ethnic race or group (1).

Traditional medical practices like ayurveda, unani, siddha, Chinese and homeopathy are especially helpful against various diseases in rural areas. Indigenous people still prefer traditional remedies to modern medicine. A survey revealed that over 6000 species of plant are used in folk or traditional medicine, and over 2500 species of plants are used for medicinal purposes. Consequently, conventional medical knowledge is a crucial source for the development of novel drugs to treat deadly diseases for the benefit of mankind. The value of biological resource protection and its long-term benefits are emphasized by ethnographic research (2).

The World Health Organization (WHO) estimates that 65-80% of the world's population living in underdeveloped countries relied primarily on plants for their basic medical needs due to poverty and lack of access to modern medicines. According to statistics, 50% of the drugs used in modern Western medicine are made only from plant components. However, the influence of Western ways of life, the decline in the number of traditional healers and the lack of enthusiasm of younger generations to continue the tradition are accelerating the rapid disappearance of knowledge about medicinal plants (3).There are more than 6000 species of higher plants in the Western Ghats and Southern Peninsula of India, including an

estimated 2000 endemic species. These 2500 species, covering more than 1000 taxa and 250 families, have been used in conventional medical systems (4).

Arebhashe Gowda community is one of the most rooted communities in the Sullia Taluk of Dakshina Kannada district in Karnataka. They are mostly farmers and landowners.Surrounded on all four sides by the Western Ghats, Sullia lies near the foothills of the Kodagu district hills. For everyday needs such as medicine, animal feed, firewood, and agricultural purposes, the Gowda community is closely linked to the forest. Due to the lack of access to modern medicine in earlier times, the oldermembers of the Gowda community have a wealth of traditional medical knowledge for a variety of ailments. Consequently, the Gowda community is a significant ethnic group in Sullia for traditional medical knowledge.

Materials and Methods

Study area

Sullia, often spelled Sulya, is a city in the Indian state of Karnataka in the Dakshina Kannada district. It serves as Sullia Taluk headquarters. It is located 81 km east of Mangalore, the district headquarters. 279 km from the state capital of Bangalore to the east, Sulya taluk is bordered by Puttur taluk to the west, Kanhangad Taluk to the West, Madikeri Taluk to the east, and Kasargod Taluk to the west, i.e., 12.5581° N, 75.3908° E (Fig. 1). The area covered is 4233-37 acres (6.61sq.km). *Tulu* and *Arebhashe* are the local languages used here. Also, people speak Kannada, Beary Bashe and Konkani.

Community study

The Arebhase Gowda, sometimes referred to as the Vokkaliga, is a large ethnic group in Sullia taluk. Sullia, the home of Arebhashe Gowda, was part of Kodagu when the Haleri dynasty ruled. The term 'Arebhashe' or 'half language' may have been used to refer to the dialect of Kannada spoken when languages become semi-linguistic (Are: half, Bhashe: speech). It is also referred to as Gowda Kannada. Arebhashe Gowda was landowner and planter. In addition to growing crops such as arecanut, pepper, and ginger, they also grow vegetables and other seasonings for their own use and for sale. The community is made up of thousands of families collectively referred to as "Mane" in the region. Each family has its own unique name and a main house called the 'Doddamane', where family members gather on special occasions.

Ethnobotanical survey

Primary information was gathered from key informants, including elderly villagers and patients who visited the healers. Semi-structured open-ended interviews conducted with informants (healers) to gather the ethnobotanical information (5). The aim of the study was explained to the healers. Data was gathered in the regional language Kannada before being translated into English. Information about the plants they use to treat illnesses, their common names, the parts of the plants they use, how they are used, the causes of the illnesses, other ingredients added in the manufacture of medicines, the symptoms of the illnesses they treat, the typical number of patients, and finally their experience in the medical field. According to the convenience of the practitioner, the guided field walk approach (5, 6) was used during the survey.

Fig. 1: Location map of the Dakshina Kannada district showing study area

A walk in the forest allowed us to check the use of certain medicinal plants for treatment by the healers and also gave an opportunity to fully collect data and plant samples. After several interviews with each source, only the formulations that remained constant were considered.

The standard floras such as Flora of Presidency of Madras (7), Flora of Karnataka (8), Flora of Udupi (9), and Flora of South Canara(10) were used to authentically identify the plants collected during the guided field walk. The Plant List (11) contains the latest plant names according to the APG classification system. A field photograph was taken of each medicinal plant used to cure a particular condition, and voucher specimens were made and preserved stored in the Herbarium of the Department of Botany, Mangalore University.

Ethnobotanical data analysis

For statistical validation, comparative analysis, and hypothesis testing, the qualitative data must be converted into quantitative form (12). Using quantitative data increases the chances of discovering promising pharmacologically important plants (13). Both qualitative and quantitative ethno-botanical indices were used to analyze the ethno-botanical data. Quantitative indices such as Uses (US), Frequency of Citation (FC), Use Category (UC), Use Report (UR), Use Value (UV), Relative Frequency of Citations (RFC), Cultural Importance Index (CI), Family Use Value (FUV), Family Importance Value (FIV), Percentage Habit Used, Percentage of Plant Species Used, Consensus value for Plant Part (CPP), Fidelity Level (FL), and Informants Consensus Factor (ICF) were used to quantify qualitative information (4,14,15).

RESULTS

18 key informants participated in the survey, including 14 men and 4 women (aged 30 to 85). Table-1 contains a list of ethnomedicinal plants and qualitative indices for each plant, including scientific name, family, local name, habit, conservation status, part used, and diseases. Quantitative indices including Use Report (UR), Frequency of Citation (FC), Uses (US) and Cultural Importance Index (CI) were calculated for data analysis.

A total of 124 plant species, representing 113 genera and 51 families, and 1 lichen species, were cited. *Allium sativum* (0.56), *Oryza sativa* (0.44), *Breynia vitis-idaea* (0.33), *Mimosa pudica* (0.33), *Ocimum tenuiflorum* (0.33), *Sesamum indicum* (0.33), and *Rauvolfia serpentina* (0.33) belong to the 124 plant species with the highest CI and utility values. These are the most common plant species used to treat various ailments that have a great cultural importance (Table 1).

Table 1: List of ethnomedicinal plants with quantitative indices

Sl. No	Voucher Number	Plant Name	Family	Habit	Status	Part used	Disease	US	FC	UR	CI
1	RCMA 9	*Acorus calamus* L.	Acoraceae	Herb	LC	Rhizome	Menstrual stomach pain and kids massage oil	2	1	2	0.111
2	RCMA165	*Aegle marmelos* (L.) Corrêa	Rutaceae	Tree	NE	Leaf	Diabetes	1	1	1	0.056
3	RCMA10	*Aerva lanata* (L.) Juss.	Amaranthaceae	Herb	NE	Root	Kidney stone and liver stone	3	3	2	0.111
4	RCMA79	*Alangium salviifolium* (L.f.) Wangerin	Cornaceae	Tree	NE	Stem Bark	Snake bite	1	1	1	0.056
5	RCMA12	*Allium cepa* L.	Amaryllidaceae	Herb	NE	Bulb	Migraine, Red Eye, Eye pain and Nail infection	4	3	3	0.167
6	RCMA13	*Allium sativum* L.	Amaryllidaceae	Herb	NE	Bulbil	Swollen Cheek, indigestion, Sickle wound, Burn wound, migraine, Snake bite, Menstrual stomach pain, cough, indigestion and nail infection	11	10	10	0.556
7	RCMA31	*Amorphophallus Paeoniifolius* (Dennst.) Nicolson	Araceae	Herb	LC	Corm	Piles	1	1	1	0.056
8	RCMA14	*Anacardium occidentale* L.	Anacardiaceae	Tree	NE	Stem Bark	Skin diseases	1	1	1	0.056
9	RCMA59	*Ananas comosus* (L.) Merr.	Bromeliaceae	Herb	NE	Fruit	Jaundice, digestion and cough	3	1	2	0.111
10	RCMA18	*Annona muricata* L.	Annonaceae	Tree	NE	Leaf, Rind of Fruit & Peduncle of fruit	Cancer	1	1	1	0.056
11	RCMA235	*Antidesma montanum* Blume	Phyllanthaceae	Shrub	NE	Leaf	Skin swollen	1	1	1	0.056
12	RCMA46	*Areca catechu* L	Arecaceae	Tree	NE	Sheathy leaf base	Eye injury	1	1	1	0.056
13	RCMA47	*Aristolochia indica* L.	Aristolochiaceae	Climber	NE	Root	Herpes and Snake bite	2	2	2	0.111
14	RCMA19	*Artabotrys* sp.	Annonaceae	Climber (Shrub)		Stem Bark	Burn injury	1	1	1	0.056
15	RCMA83	*Artemisia indica* Willd.	Compositae	Herb	NE	Leaf	Menstrual stomach pain and kids massage oil	2	1	2	0.111
16	RCMA2	*Asystasia gangetica* (L.) T. Anderson	Acanthaceae	Herb	NE	Leaf	Pitta	1	1	1	0.056
17	RCMA84	*Ayapana triplinervis* (Vahl) R.M.King & H.Rob.	Compositae	Herb	VU	Leaf	Sickle wound and asthma	1	2	2	0.111

18	RCMA191	*Azadirachta indica* A. Juss	Meliaceae	Tree	NE	Leaf	Chicken pox, Skin ulcer, diabetes, varicose vein and paralysis	5	3	5	0.278
19	RCMA150	*Bambusa bambos* (L.) Voss	Poaceae	Shrub	NE	Saw dust	Headache	1	1	1	0.056
20	RCMA56	*Basella alba* L.	Basellaceae	Herb	NE	Leaf	Menstrual stomach pain	1	1	1	0.056
21	RCMA95	*Benincasa hispida* (Thunb.) Cogn.	Cucurbitaceae	Climber	NE	Fruit	TB	2	2	2	0.111
22	RCMA48	*Borassus flabellifer* L.	Arecaceae	Tree	EN	Stem Bark	Pits	1	1	1	0.056
23	RCMA237	*Breynia vitis-idaea* (Burm.f.)C.E.C.Fisch.	Phyllanthaceae	Shrub	NE	Leaf	Herpes, Red mumps, Red rashes, Skin itching, Snake bite and Boils	13	6	6	0.333
24	RCMA63	*Calophyllum apetalum* Willd.	Calophyllaceae	Tree	NE	Stem Bark	Urine inflammation	2	2	2	0.111
25	RCMA32	*Calotropis gigantea* (L.) Dryand.	Apocyancaeae	Shrub	NE	Leaf	Snake bite	1	1	1	0.056
26	RCMA145	*Careya arborea* Roxb.	Lecythidaceae	Tree	NE	Stem Bark	Skin itching, Red mumps and wound	3	3	2	0.111
27	RCMA49	*Caryota urens* L.	Arecaceae	Tree	NE	Stem Bark	Skin diseases	2	2	2	0.111
28	RCMA146	*Cassia fistula* L.	Leguminosae	Tree	NE	Stem Bark	Skin diseases	1	1	1	0.056
29	RCMA20	*Centella asiatica* (L.) Urb.	Apiaceae	Herb	NE	Leaf	Herpes, Red mumps, Chicken pox, Red rashes and Memory power	6	3	3	0.167
30	RCMA147	*Cicer arietinum* L.	Leguminosae	Herb	NE	Seed powder	Herpes and Red mumps	1	1	1	0.056
31	RCMA 169	*Citrus limon* (L.) Osbeck	Rutaceae	Tree	NE	Fruit	Red mumps, boils, Swollen cheek, Nail infection, Skin disease and snake bite	4	2	2	0.111
32	RCMA120	*Clerodendrum infortunatum* L.	Lamiaceae	Shrub	NE	Leaf	Sickle wound and Burn wound	7	5	5	0.278
33	RCMA171	*Clitoria ternatea* L.	Leguminosae	Climber	NE	Leaf	Goitre	3	2	2	0.111
34	RCMA50	*Cocos nucifera* L	Arecaeae	Tree	NE	Oil	Sickle wound , Burn wound, Migraine, Female fertility, Herpes, Red mumps, Urinary inflammation, Menstrual heavy bleeding, Sickle wound, Skin ulcer, Boils, Skin swollen , Child massage oil, Allergy and Nail infection	1	1	1	0.056
35	RCMA21	*Coriandrum sativum* L	Apiaceae	Herb	NE	Seed	Memory power, Kidney stone and Urinary inflammation	27	13	17	0.944
36	RCMA99	*Costus pictus* D.Don	Costaceae	Herb	NE	Leaf	Herpes	4	3	3	0.167
37	RCMA22	*Cuminum cyminum* L.	Apiaceae	Herb	NE	Seed	Kidney stone, Urinary Inflammation, White discharge, Eye ache, Female fertility, Red eye, Menstrual stomach pain, Urinary inflammation, Menstrual heavy bleeding, memory power and Jaundice	15	9	13	0.722
38	RCMA349	*Curcuma longa* L.	Zingiberaceae	Herb	NE	Rhizome	Diabetes, Bed wetting, Skin ulcer, Skin itching, Red mumps, Child massage oil, Burn wound, Varicose vein, Boils, Allergy, Herpes and skin swollen.	17	8	12	0.667
39	RCMA11	*Cyathula prostrata* (L.)Blume	Amaranthaceae	Herb	NE	Leaf	Menstrual stomach pain	1	1	1	0.056
40	RCMA193	*Cyclea peltata* (Lam.) Hook.F. & Thomson	Menispermaceae	Climber	NE	Root	White discharge, Urinary inflammation and snake bite.	3	3	3	0.167
41	RCMA301	*Cynodon dactylon* (L.) Pers.	Poaceae	Herb	NE	Leaf	Herpes, Red mumps, Chicken pox, Red rashes. Mouth sore and Skin swollen	9	5	5	0.278
42	RCMA302	*Dalbergia horrida* (Dennst.) Mabb.	Leguminosae	Climber (Shrub)	NE	Leaf	Mouth sore	1	1	1	0.056
43	RCMA303	*Dalbergia latifolia* Roxb.	Leguminosae	Tree	VU	Stem Bark	Pits, weakness, stomach inflammation & tasteless	3	1	2	0.111
44	RCMA304	*Desmodium triflorum* (L.) DC.	Leguminosae	Herb	NE	Leaf	Burn injury	1	1	1	0.056
45	RCMA87	*Eclipta prostrata* (L.) L.	Compositae	Herb	NE	Aerial part	Herpes	1	1	1	0.056
46	RCMA88	*Elephantopus scaber* L.	Compositae	Herb	NE	Root	Nail infection	1	1	1	0.056
47	RCMA353	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	Herb	NE	Seeds	Snake bite	1	1	1	0.056
48	RCMA402	*Ensete superbum* (Roxb.) Cheesman	Musaceae	Herb		Seeds	Kidney stone	2	2	2	0.111
49	RCMA154	*Erythrina variegata* L.	Leguminosae	Tree	LC	Stem Bark	Menstrual stomach pain	1	1	1	0.056
50	RCMA23	*Ferula asafoetida* H.Karst.	Apiaceae	Herb		Resin	Cough, Asthma, Menstrual stomach pain and children massage oil	6	3	4	0.222
51	RCMA204	*Ficus benghalensis* L.	Moraceae	Tree	NE	Stem Bark	Skin diseases	1	1	1	0.056
52	RCMA206	*Ficus exasperata* Vahl	Moraceae	Tree	NE	Stem Bark	Burn Wound	1	1	1	0.056

53	RCMA205	*Ficus racemosa* L.	Moraceae	Tree	NE	Stem Bark	Paralysis	1	1	1	0.056
54	RCMA239	*Flueggea leucopyrus*Willd.	Phyllanthaceae	Shrub	NE	Leaf	Red eye and eye pain	2	1	1	0.056
55	RCMA122	*Ganoderma sp*	Ganodermaceae	Shrub		Whole part	Cheek swelling	2	2	2	0.111
56	RCMA70	*Getonia floribunda* Roxb.	Combretaceae	Climber (Shrub)	NE	Leaf	Loose motion	1	1	1	0.056
57	RCMA 172	*Haldina cordifolia* (Roxb.) Ridsdale	Rubiaceae	Tree	NE	Stem Bark	Swollen Cheek	2	2	2	0.111
58	RCMA181	*Helicteres isora* L	Malvaceae	Shrub	NE	Fibre	Skin itching, Red rashes and mouth sore	3	2	2	0.111
59	RCMA61	*Heliotropium indicum* L.	Boraginaceae	Herb	NE	Leaf	Burn injury	1	1	1	0.056
60	RCMA38	*Hemidesmus indicus* (L.) R. Br. ex Schult.	Apocynaceae	Climber	NE	Root	White discharge, Menstrual stomach pain and paralysis	4	4	4	0.222
61	RCMA183	*Hibiscus rosa-sinensis* L.	Malvaceae	Tree	NE	Leaf	Diabetes, White discharge, Urinary inflammation, Stomach ache and Body heat.	5	3	4	0.222
62	RCMA16	*Holigarna ferruginea* Marchand	Anacardiaceae	Tree	NE	Stem Bark	Skin diseases	1	1	1	0.056
63	RCMA156	*Indigofera tinctoria* L.	Leguminosae	Shrub	NE	Leaf	Skin itching, Red mumps, Herpes, Boils, Allergy andNail infection,	11	4	4	0.222
64	RCMA219	*Jasminum grandiflorum* L.	Oleaceae	Climber	NE	Leaf	Herpes	1	1	1	0.056
65	RCMA5	*Justicia adhatoda* L	Acanthaceae	Shrub	NE	Whole plant	Asthma	1	1	1	0.056
66	RCMA357	*Kaempferia galanga* L.	Zingiberaceae	Herb	NE	Rhizome	Skin swollen	1	1	1	0.056
67	RCMA185	*Lawsonia inermis* L.	Lythraceae	Tree	NE	Leaf	Menstrual stomach pain and kids massage oil	2	1	2	0.111
68	RCMA123	*Leucas aspera* (Willd.) Link	Lamiaceae	Herb	NE	Leaf	Migraine and headache	3	3	3	0.167
69	RCMA172	*Lygodium flexuosum* (L.)Sw.	Lygodiaceae	Climber	NE	Root	Ear infection	1	1	1	0.056
70	RCMA202	*Madhuca longifolia* (J.Koenig ex L.) J.F.Macbr.	Sapotaceae	Tree	NE	Stem Bark	Skin diseases	1	1	1	0.056
71	RCMA25	*Mangifera indica* L.	Anacardiaceae	Tree	DD	Stem Bark	White discharge	1	1	1	0.056
72	RCMA194	*Melastoma malabathricum* L	Melastomataceae	Shrub	NE	Leaf	Cough	1	1	1	0.056
73	RCMA195	*Memecylon malabaricum* Cogn.	Melastomataceae	Shrub	NE	Leaf	Fat loss and Burn wound	2	2	2	0.111
74	RCMA114	*Mimosa pudica*L.	Leguminosae	Shrub	LC	Root	Kidney stone, Spider bite, White discharge, Urinary inflammation, Menstrual problem, Uterus problem and Cholesterol	7	4	6	0.333
75	RCMA403	*Mimusops elengi*L.	Sapotaceae	Tree	NE	Stem Bark	Skin diseases	4	1	1	0.056
76	RCMA103	*Momordica charantia* L	Cucurbitaceae	Climber	NE	Leaf	Female Fertility	1	1	1	0.056
77	RCMA209	*Moringa oleifera* Lam.	Moringaceae	Tree	NE	Leaf	Migraine and Burn wound	4	4	4	0.222
78	RCMA 176	*Murraya koenigii*(L.) Spreng	Rutaceae	Tree	NE	Leaf	Mouth sore, throat sore and diabetes	3	2	2	0.111
79	RCMA211	*Musa paradisiaca* L.	Musaceae	Herb	NE	Pseudo stem core	Diabetes	1	1	1	0.056
80	RCMA 177	*Mussaenda laxa* (Hook.f.) Hutch. ex Gamble	Rubiaceae	Climber (Shrub)	NE	Stem Bark	Eye ache, Child massage oil, Nail infection and Herpes.	4	4	4	0.222
81	RCMA196	*Naregamia alata* Wight & Arn.	Meliaceae	Herb	NE	Whole plant	Child Massage oil	2	2	2	0.111
82	RCMA306	*Nigella indica* Roxb. ex Fleming	Ranunculaceae	Herb		Seed	Ear infection, Burn injury, Nail infection, Kidney stone and Skin swollen	5	5	5	0.278
83	RCMA223	*Nyctanthes arbor-tristis* L.	Oleaceae	Tree	NE	Flower	Red eye	2	2	2	0.111
84	RCMA125	*Ocimum tenuiflorum* L	Lamiaceae	Shrub	NE	Leaf	Diabetes, Asthma, Migraine, Snake bite and Red mumps.	6	5	6	0.333
85	RCMA224	*Olea dioica* Roxb.	Oleaceae	Tree	NE	Leaf	White discharge, Menstrual heavy bleeding, Herpes & Skin swelling	4	4	4	0.222
86	RCMA320	*Oryzas ativa* L.	Poaceae	Herb	NE	Grains	Diabetes, Cheek swelling, Nail infection, Red mumps, Skin itching, Herpes, Snake bite and Skin swollen	11	8	8	0.444
87	RCMA241	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	Herb	NE	Whole plant	Jaundice, Skin swollen and Female fertility	2	2	2	0.111
88	RCMA359	*Physalis minima* L.	Phyllanthaceae	Herb	NE	Leaf	Female Fertility	1	1	1	0.056
89	RCMA243	*Piper betle* L.	Piperaceae	Climber	NE	Leaf	Cough, Asthma and Nail infection	5	3	3	0.167
90	RCMA245	*Piper nigrum* L.	Piperaceae	Climber	NE	Fruit	Indigestion ,Red eye, Eye pain, Migraine and Snake bite	5	4	4	0.222
91	RCMA127	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Herb	NE	Leaf	Heat boils, Skin itching, Red rashes, Red mumps, Boil and allergy	6	3	3	0.167
92	RCMA128	*Pogostemon heyneanus* Benth.	Lamiaceae	Herb	NE	Leaf	Menstrual stomach pain and kids massage oil	2	1	2	0.111
93	RCMA42	*Pothos scandens* L.	Araceae	Climber	NE	Whole plant	Cholesterol and heart block	3	2	3	0.167

94	RCMA162	*Pterocarpus marsupium* Roxb	Leguminosae	Tree	VU	Stem Bark	Diabetes, menstrual stomach pain, paralysis, cholesterol and heart block	5	4	5	0.278
95	RCMA43	*Rauvolfia serpentina* (L.) Benth. ex Kurz	Apocynaceae	Herb	NE	Root	Herpes, nail infection, urinary inflammation, snake bite, blood pressure and kids' massage oil.	8	5	6	0.333
96	RCMA72	*Reissantia indica* (Wild.) N. Hallé	Celastraceae	Climber (Shrub)	NE	Leaf	Cough	1	1	1	0.056
97	RCMA117	*Ricinus communis* L.	Euphorbiaceae	Shrub	NE	Root	Paralysis	1	1	1	0.056
98	RCMA181	*Ruta graveolens* L.	Rutaceae	Shrub	NE	Leaf	Snake bite and kids massage oil	2	2	2	0.111
99	RCMA73	*Salacia reticulata* Wight	Celastraceae	Tree	NE	Roots	Red mumps and boils	2	1	1	0.056
100	RCMA405	*Sapindus laurifolius* Balb. ex DC	Sapindaceae	Tree	NE	Stem Bark	Kidney stone	1	1	1	0.056
101	RCMA163	*Saraca asoca* (Roxb.) Willd.	Leguminosae	Tree	VU	Leaf	Red mumps	1	1	1	0.056
102	RCMA407	*Scleropyrum pentandrum* (Dennst.) Mabb.	Santalaceae	Tree	NE	Leaf	Herpes	1	1	1	0.056
103	RCMA247	*Scoparia dulcis* L.	Plantaginaceae	Herb	NE	Leaf	Kidney stone	1	1	1	0.056
104	RCMA164	*Senna alata* (L.) Roxb.	Leguminosae	Shrub	NE	Leaf	Ringworm and Red mumps	2	2	2	0.111
105	RCMA165	*Senna tora* (L.) Roxb	Leguminosae	Shrub	NE	Leaf	Herpes and red mumps	4	2	2	0.111
106	RCMA234	*Sesamum indicum* L.	Pedaliaceae	Herb	NE	Oil	Ear infection, nail infection, paralysis, joint pain and kids' massage oil	6	4	6	0.333
107	RCMA188	*Sida alnifolia* L.	Malvaceae	Shrub	NE	Leaf	Bumps on skin and Skin abscess	3	3	3	0.167
108	RCMA360	*Solanum americanum* Mill.	Solanaceae	Herb	NE	Leaf	Female fertility, menstrual stomach pain and kids' massage oil	1	2	3	0.167
109	RCMA18	*Spondias pinnata* (L. f.) Kurz	Anacardiaceae	Tree	NE	Stem Bark	Skin diseases	2	2	2	0.111
110	RCMA226	*Syzygium aromaticum* (L.) Merr. &L.M.Perry	Myrtaceae	Tree	NE	Dried flower	Burn injury	1	1	1	0.056
111	RCMA227	*Syzygium caryophyllatum* (L.) Alston	Myrtaceae	Tree	NE	Stem Bark	Burn wound	1	1	1	0.056
112	RCMA228	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree	NE	Stem Bark	Diabetes	2	2	2	0.111
113	RCMA229	*Syzygium travancoricum* Gamble	Myrtaceae	Tree	CR	Leaf	Paralysis	1	1	1	0.056
114	RCMA26	*Tabernaemontana alternifolia* L.	Apocynaceae	Tree	NE	Leaf	Herpes	1	1	1	0.056
115	RCMA44	*Tabernaemontana divaricata* (L.) R.Br.ex Roem. & Schult.	Apocynaceae	Tree	NE	Leaf	Skin swollen, red boils, allergy, red mumps and nail infection	5	2	2	0.111
116	RCMA166	*Tamarindus indica* L.	Leguminosae	Tree	NE	Leaf	Foot nail infection and Paralysis	2	2	2	0.111
117	RCMA74	*Terminalia arjuna* (Roxb. ex DC.)Wight & Arn.	Combretaceae	Tree	NE	Stem Bark	Heart block	1	1	1	0.056
118	RCMA198	*Toona ciliata* M. Roem.	Meliaceae	Tree	LC	Stem Bark	Urinary inflammation	1	1	1	0.056
119	RCMA364	*Tribulus terrestris* L.	Zygophyllaceae	Herb	NE	Thorn	Kidney stone	1	1	1	0.056
120	RCMA168	*Trigonellafoenum-graecum* L.	Leguminosae	Herb	NE	Seed	Diabetes	1	1	1	0.056
121	RCMA28	*Uvaria narum* A.DC.	Annonaceae	Shrub	NE	Tender leaf	Urinary inflammation	1	1	1	0.056
122	RCMA133	*Vitex negundo* L.	Lamiaceae	Tree	NE	Leaf	Migraine, head ache and bumps on skin	4	4	4	0.222
123	RCMA183	*Zanthoxylum rhetsa* DC.	Rutaceae	Shrub	NE	Stem Bark	Swollen cheek	2	2	2	0.111
124	RCMA367	*Zingiber officinale* Roscoe	Zingiberaceae	Herb	NE	Rhizome	Diabetes and Asthma	3	3	3	0.167

US = Use value; FC = Frequency of citation; UR = Use report; CI = Cultural Importance Index; NE= Not Evaluated; LC = Least Concern; VU = Vulnerable; EN = Endangered; CR = Critically Endangered.

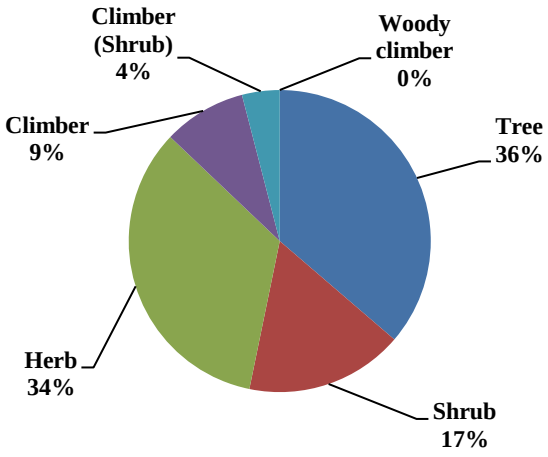

Fig. 2 : Percentage of habit used by herbal healers

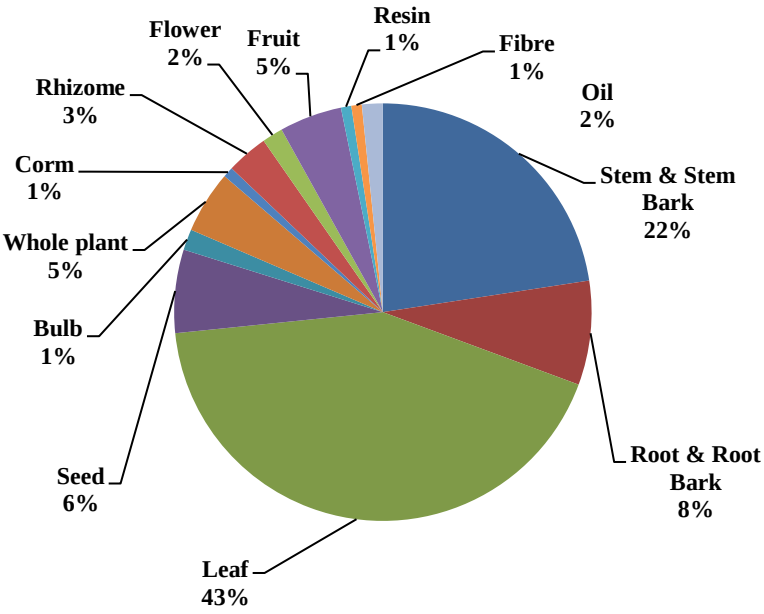

Fig. 3 : Consensus value for Plant Parts (CPP) for drug preparation

For the drug preparation 36.3% tree species, 33.9% herbaceous species,16.93% shrub species, and 12.9% climber species (Fig. 2,3) together with leaf (CPP- 42%), stem (CPP - 28%) and root (CPP - 8%) have been used extensively by herbalist.

The study area included the following species, identified at different levels as requiring conservation: *Syzygium travancoricum* (CR), *Borassus flabellifer* (EN), *Ayapana triplinervis* (VU), *Dalbergia latifolia* (VU), *Pterocarpus marsupium* (VU), and *Saraca asoca* (VU) are given in Table 1.

FIV and species data(Fig. 4) show that Leguminosae (15 species with FIV = 100), Lamiaceae (6 species with FIV = 100), and Apiaceae (4 species with FIV = 100) are three species-rich families with high FIV values but Annonaceae (3 species with FUV = 6.35), Rutaceae (5 species with FUV = 4.15), Apocyanaceae (5 species with FUV = 3.34), and Apiaceae (4 species with FUV = 1.60) are important species with high FUV(Fig. 5)because these families have few species, but these species are widely used for various ailments.

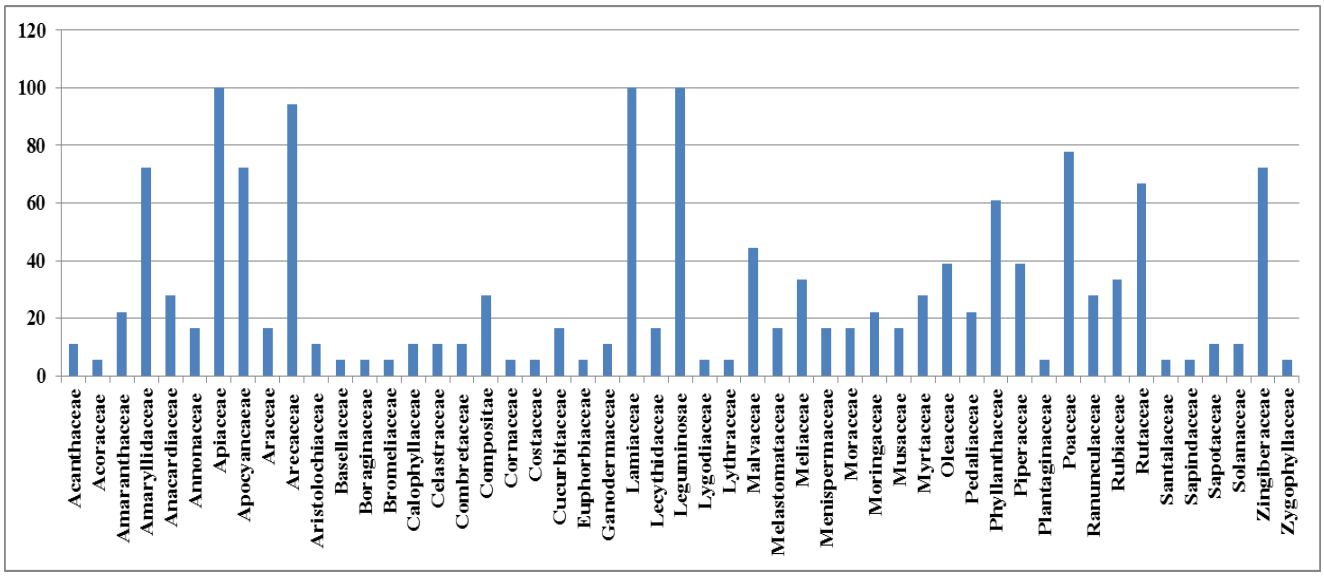

Fig. 4 : Family importance value (FIV)

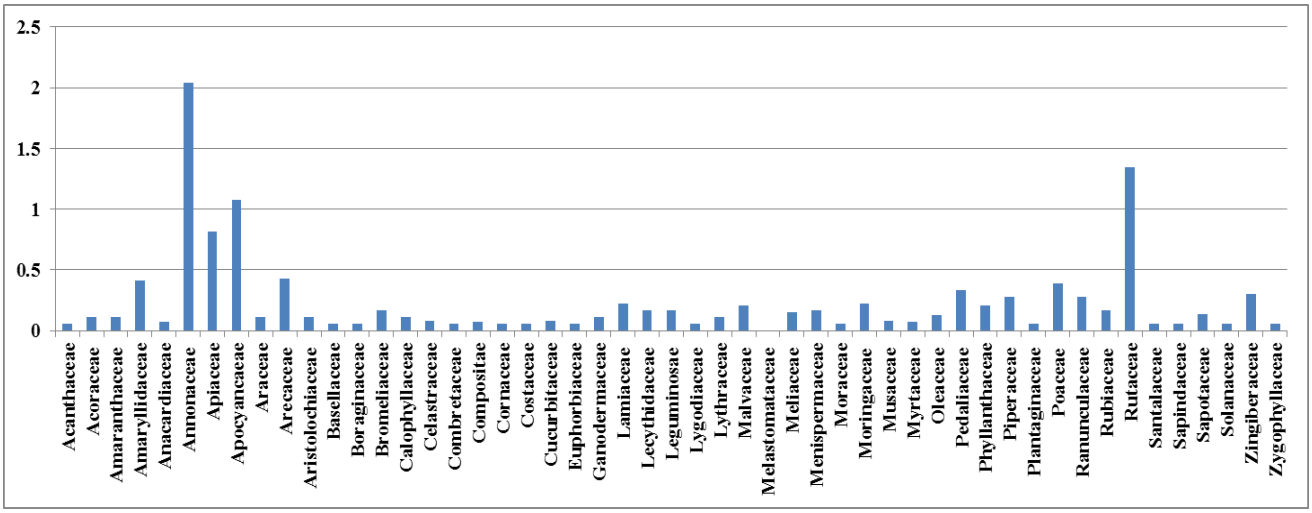

Fig. 5: Family Use Value (FUV)

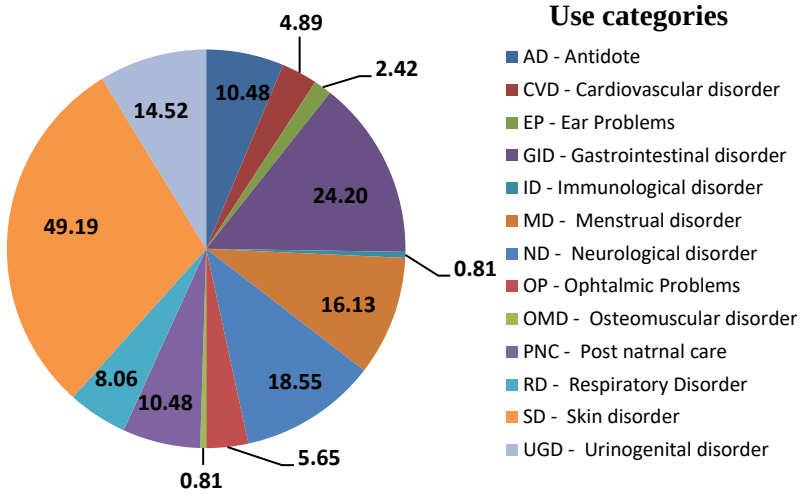

Fig. 6: Percentage of plant species used per use category

The various ailments that healers have treated are grouped into 13 use categories. As shown in Fig. 6, the highest percentage of plant species used to treat skin diseases (49.19%), gastrointestinal diseases (24.19%), neurological diseases (18.54%), and menstrual disorders (16.12%) followed.

ICF (Fig. 7) is used to determine the degree of agreement between informants regarding their knowledge of a particular illness, or the percentage of information shared between informants regarding a particular illness. The 13 use categories with the highest ICF values are skin disease (61 plant species, 118 use reports, ICF = 0.49), ophthalmic issues (7 species, 10 use reports, ICF = 0.33), menstrual disorders (20 species, 28 use reports, ICF=0.30), and neurological condition (23 species, 32 reports of use, ICF= 0.29).

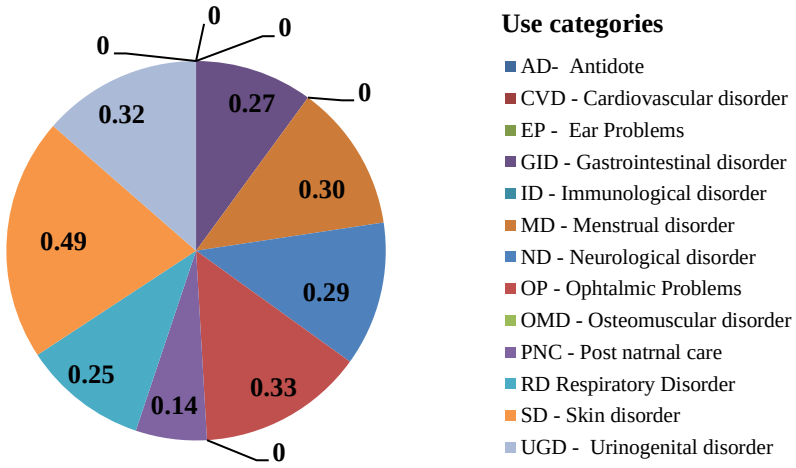

Fig. 7: Informants consensus factor (ICF) for use category

Table 2: List of ethnomedicinal plants used for skin diseases with quantitative indices

Sl. No	Plant Name	UV	RFC	FL
1	*Allium cepa* L.	0.22	0.17	33.33
2	*Allium sativum* L.	0.61	0.56	50
3	*Azadirachta indica* A. Juss	0.28	0.17	40
4	*Breynia vitis-idaea* (Burm. f.) C.E.C.Fisch.	0.72	0.33	100
5	*Centella asiatica* (L.) Urb.	0.33	0.17	66.67
6	*Citrus limon* (L.) Osbeck	0.39	0.28	80
7	*Cocos nucifera* L	1.5	0.72	52.94
8	*Curcuma longa* L.	0.94	0.44	41.67
9	*Cynodon dactylon* (L.) Pers.	0.5	0.28	80
10	*Indigofera tinctoria* L.	0.61	0.22	100
11	*Moringa oleifera* Lam.	0.22	0.22	50
12	*Mussaenda laxa* (Hook. f.) Hutch. ex Gamble	0.22	0.22	50
13	*Nigella indica* Roxb. ex Fleming	0.28	0.28	60
14	*Ocimum tenuiflorum* L	0.33	0.28	16.67
15	*Olea dioica* Roxb.	0.22	0.22	50
16	*Oryza sativa* L.	0.61	0.44	75
17	*Piper betle* L.	0.28	0.17	33.33
18	*Plectranthus amboinicus* (Lour.) Spreng.	0.33	0.17	100
19	*Rauvolfia serpentina* (L.) Benth. ex Kurz	0.44	0.28	33.33
20	*Sesamum indicum* L.	0.33	0.22	16.66
21	*Sida alnifolia* L.	0.17	0.17	100
22	*Vitex negundo* L.	0.22	0.22	25

UV = Use value; RFC = Relative frequency of citation; FL = Fidelity level

DISCUSSION

According to ethnobotanical studies, the Gowda community is the predominant community with the most extensive traditional medical knowledge of skin problems. They used 214 plant species from 113 genera and 51 families, of which *Cocos nucifera* (CI-0.94), *Cuminum cyminum* (CI-0.72), *Curcuma longa* (CI-0.66), and *Allium sativum* (CI-0.55) the culturally most important or commonly used species are in Sullia Taluk" (4) and in Belgaum District 92 ethnomedicinal plants from 54 families have been documented (16). This showed how the native community varies both by geographic area and by the type of plants used to treat various diseases.

Fig. 1 and 2 show that 36.3% of tree species, 33.9% are herbaceous plant species, and 42% are leaves and 28% are stems, which are used extensively by herbal healers to make medicines. In the Tumkur District, herbal healers used primarily 28% leaf and 17% fruity components, along with 55% herbaceous species and 23% climber species (17). This illustrated the diversity of local herbalists' practices and the plants they use to treat patients.

FIV and species data show that Leguminosae (15 species with FIV = 100), Lamiaceae (6 species with FIV = 100), and Apiaceae (4 species with FIV = 100) are three species-rich families with high FIV values but Compositae (FIV = 27.77%), Leguminosae (22.22% each), Acanthaceae, Myrsinaceae, and Phyllanthacea (FIV = 16.67%) were all species-rich families identified in the Siddapur region of Uttar Kannada district (18). According to the FUV, the Annonaceae (3 species with FUV = 6.35), Rutaceae (5 species with FUV = 4.15), Apocyanaceae (5 species with FUV = 3.34), and Apiaceae (4 species with FUV = 1.60) important species because these families have few species but these species are frequently used for various illnesses. However, in Bantwala taluk, Plumbaginaceae (5), Rhamnaceae (5), and Combretaceae (4.2) were low in number but were widely used to treat a wider variety of diseases (4).

According to ICF data analysis, skin diseases (61 plant species, 118 use reports with ICF = 0.49) among the 13 use categories were the most commonly treated condition by healers. Ophthalmic issues (7 species, 10 use reports with ICF = 0.33), menstrual disorders (20 species, 28 use reports with ICF=0.30), and neurological disorders (23 species, 32 use reports with ICF= 0.29) were the second most frequently treated conditions but general health issues were treated the most frequently in the Khare-vokkaliga community in Uttar Kannada district, general health problems were most commonly treated followed by poisoning, fever, and gastrointestinal issues (19).

Herbalists used 61 plant species to treat skin problems, among which knowledge of medicinal uses of *Breynia vitis-idaea* (FL-100%), *Indigofera tinctoria* (FL-100%), *Plectranthus amboinicus* (FL-100%), *Sida alnifolia* (FL-100%), *Cynodon dactylon* (FL-80%), *Citrus limon* (FL-80%) and *Oryza sativa* (FL-75%) were well exchanged among the healers of Gowda

communitybut in Uttara Kannada district, *Cassia fistula* appears to be the most frequently used plant for treating skin conditions(20), and herbalists in coastal areas of the Central Western Ghats in Karnataka have also used *Caesalpinia mimosoides*, *Basella alba*, *Hygrophila schulli*, *Cissus discolor*, and *Mammea suriga* because they have high FL values (21).

CONCLUSION

Located in the Dakshina Kannada District, Sullia Taluk lies in the foothills of the Western Ghats and has a diverse range of floral species. The Gowda community is an indigenous community and the majority of their elders have extensive knowledge of traditional medicine. We gathered Ethnobotanical information by interviewing a total of 18 key informants. Qualitative and quantitative data analysis revealed that all the informants mostly treated various types of skin diseases such as herpes, chicken pox, skin ulcer, red mumps, and red rashes, skin itching, boils and skin allergies by using 61 plant species. *Breynia vitis-idaea, Indigofera tinctoria, Plectranthus amboinicus, Sida alnifolia, Cynodon dactylon, Citrus limon,* and *Oryza sativa* are just a few of the 61 species of plants whose therapeutic benefits have been recognized by the traditional healers of the Gowda community, By using this information, novel polyherbal formulations for the treatment of skin diseases can be developed and scientifically validated.

CONFLICT OF INTEREST

Authors declare no conflicts of interest.

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