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Ethnomedicinal Uses of Plants for the treatment of various ailments in District Kech, Balochistan

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Abstract : *People utilize medicinal plants for a range of medical purposes in many different places of the world. The objective of this study was to record the uses of plants in medicine for a range of ailments in the Kech (Turbat) district of Balochistan. Five hundred and twenty-five resident's twenty percent were traditional healers which were questioned using closed-ended, open-ended, semi-structured, and structured interviews. Women have contributed more knowledge since, for the most part, they are the primary caregivers for their families and kids. Using 100 species from 55 families, the native people lived. Scientific names, place names, voucher numbers, family names, life forms, medicinal uses of plants and plant parts, sickness remedies, preparation techniques, frequency citations (FC), relative frequency citations (RFC), use reports, and use values were all noted. The Lamiaceae family had the greatest number of species, 26. Medicinal plants were employed to treat 14 different disease categories in the current investigation. 100% fidelity values were estimated for six plant species: Lawsonia inermis L., Punica granite L., Phoenix acaulis Roxb., Trigonella anguina Delile, and Zataria multiflora Boiss. The two plants with the highest RFC values, Phoenix acaulis Roxb and Punica granatum L., were given 0.29 and 0.2. Most plants used to treat problems of the digestive system belong to the group of 14 types. 100% fidelity values were estimated for six plant species: Lawsonia inermis L., Punica granatum L., Phoenix acaulis Roxb., Trigonella anguina Delile, and Zataria multiflora Boiss. The two plants with the highest RFC values, Phoenix acaulis Roxb and Punica granatum L., were given 0.29 and 0.2. Most plants used to treat problems of the digestive system belong to the group of forty types. Dermatological disorders and different ailment groups had the highest ICF values (1.0). Citrullus colocynthis (L) had the greatest use value (0.75 UV). Phoenix acaulis Roxb had the highest RFC value, at 0.29. Herbal remedies come in two varieties: domesticated plants and untamed varieties. The plant's leaves were frequently used in traditional herbal remedies due to their abundance of bioactive secondary metabolites. In district Kech (Turbat), infusion was the most popular method of preparing herbal remedies. Because Ocimum basilicum L (10 UR) is so widely known among the aboriginal people, it was the shrub that was used most frequently. Research indicates that although the natives continue to use medicinal herbs, urbanization is erasing their traditional knowledge.*

Keywords: *Ethno medicine, medicinal plants, traditional healing, Balochistan, Kech district, herbal remedies, local knowledge, plant base treatments, Disease prevention*

1. INTRODUCTION

The study of plants and their traditional use, based on indigenous knowledge, is known as ethnobotany (Ahmad *et al*., 2014). The term, which was first used by John Harshberger in 1895, examines the ways in which people have traditionally utilised plants for food, medicine, and other purposes (Gaoue *et al*., 2017). Experience and knowledge passed down through the generations formed the basis of the early usage of therapeutic herbs (Kelly, 2009). Only 10% of Pakistan's approximately 6000 plant species—600–700 of which are used medicinally—have received scientific validation (Shinwari, 2010; Shanheen *et al*., 2014). Although traditional healing was used by more than 84% of Pakistanis in the 1950s, it is still mostly used in rural regions today (Mussarat *et al*., 2014). Plants continue to play important roles in healthcare, particularly in nations like China, India, and Pakistan, and have been used to treat serious illnesses, including pandemics, globally (WHO, 1999; Park *et al*., 2012). The majority of medicinal plant knowledge is still transmitted orally through the generations (Aziz *et al*., 2016).

2. Materials and Methods

2.1 Plant Collection and Identification

Therapeutic plant collection in Turbat region was conducted during summer, with specimens preserved at Sardar Bahadur Khan Women's University. Ethnobotanical data was gathered through field interviews with 120 informants aged 15-70, highlighting a lack of prior documentation of medicinal plant use in District Kech and the importance of preserving indigenous knowledge.

2.2 Informal Consensus Factor (ICF)

ICF = (Nur-Nt) (Nur- 1)

The Informal Consensus Factor (ICF) gauges local agreement on plant uses for diseases, with high ICF indicating strong knowledge, low ICF indicating disagreement.

2.3 Frequency Citation (FC) and Relative Frequency Citation (RFC)

FC measures plant species mentions by informants, while RFC calculates the importance of each species in community traditional knowledge, regardless of its use-category.

2.4 Use Value (UV) and Use Report (UR)

Use Value (UV) measures the ethnobotanical significance of plant species by tracking their frequency of use-reports, calculated as *UV = ∑U/N* (Phillips *et al*., 1994).

3. Results and Discussion

3.1 Plant Use and Demographics

A total of 120 residents from Kech district (Turbat) were interviewed, including areas like Hirronk, Tijaban, Karki, Sami, and Khalag. Women made up 55%, men 25%, and traditional healers 20% of respondents. Women contributed more knowledge due to their role in family health and being more available during survey times (Sarwat *et al*., 2012; Jamila & Mostafa, 2014). Informants aged 20–70 years, with 70% aged 60–80, showed significant traditional knowledge, while younger people contributed less (Malik *et al*., 2019). This knowledge is culturally transmitted, with local herbalists relying on signs and symptoms over lab tests for diagnosis (Bano *et al*., 2014).

3.2 Informant Consensus Factor (ICF)

The study categorized 272 illnesses into 14 groups, using 84 plant species for multiple ailments and 16 for single ones. Most species treated digestive, respiratory, and infections, with highest consensus in dermatological diseases (Bibi *et al*., 2014).

3.3 Relative Frequency of Citation (RFC)

Phoenix acaulis Roxb and Punica granatum L had the highest RFC values (0.29 and 0.2 respectively), while Adiantum capillus-veneris L, Vicia faba L, Launaea nudicaulis L Hook.f, and Nepeta praetervisa Rech.f had the lowest (1.01 each). Similar RFC values were reported in Harnai district, Balochistan (Tareen *et al*., 2016). Table 3.1).

Table: 3.1 Fidelity level (FL) of medicinal plants of district Kech (Turbat).

S#	Plant name	No of informants reported the taxa	No of ailments treated	No of most frequently determined by informants	FL
1.	*Anethum foeniculoides* Maire & Wilczek	16	5	16	100
2.	*Acacia jacquemontii* Benth	17	3	15	88.2
3.	*Azadirachta indica* A.Juss.	17	4	14	82.3
4.	*Citrus assamensis* R.M.Dutta & Bhattacharya	24	3	24	100
5.	*Cynodon aethiopicus* Clayton & Harlan	18	1	14	77.7
6.	*Cannabis sativa* L	18	1	16	88.8
7.	*Citrullus colocynthis* (L.) Schrad	17	4	16	94.1
8.	*Calotropis procera* (Aiton) Dryand	16	4	15	93.7
9.	*Cocculus pendulus* (J.R.Forst. & G.Forst.) Diels	16	4	14	87.5

10.	*Daucus aleppicus* J.Thiébaut	26	3	21	80.7
11.	*Ficus caatingae* R.M.Castro	24	3	20	83.3
12.	*Lawsonia inermis* L	17	1	17	100
13.	*Lactuca serriola* L	33	7	28	84.8
14.	*Maerua crassifolia* Forssk	16	4	14	87.5
15.	*Ocimum basilicum* L.	17	3	15	88.2
16.	*Orostachys aggregata* (Makino) H. Hara	17	3	15	88.2
17.	*Phoenix acaulis* Roxb	35	3	35	100
18.	*Punica granatum* L	26	1	26	100
19.	*Prosopis cineraria* (L.) Druce	16	3	14	87.5
20.	*Ricinus communis* L	16	3	13	81.2
21.	*Trigonella anguina* Delile	16	1	14	87.5
22.	*Trichodesma africanum* (L.) Sm.	25	2	25	100
23.	*Tamarix indica* Willd	21	3	19	90.4

24.	*Zataria multiflora* Boiss.	29	7	29	100

1.4 Taxonomic classification

The scientific names, local names, voucher numbers, family names, life forms, applications of the plants and plant parts used for medicinal purposes, disease treatments, preparation Values were all included for a total of 55 families and 100 species (Table.3.3). Lamiaceae (26 species), Asteraceae (7 species), Fabaceae (6 species), Poaceae (4 species), Asclepiadaceae, mimosaceae, euporhiaceae, and capparaceae (3 species each) are the families with the highest number of species per unit of use. Most used families of the medicinal plants are shown in the below (**Table**.3.2) and list of medicinal plants used by the local people of district Kech (Turbat) are shown in (**Table**.3.3).

Table.3.2 Most used families of the study area (Kech).

Family name	**Number of taxa**
Lamiaceae	26
Asteraceae	7
Fabaceae	6
Poaceae	4
Asclepiadaceae	3
Mimosaceae	3
Euporhiaceae and	3
Capparaceae	3

Table 3.3. List of medicinal plants used by the local people of district Kech (Turbat), Balochistan

S #	Taxonomy	Local name	Voucher number	Family	Life form	Part used	Diseases treated	Preparation mode	FC	RFC	UR	UV
1.	*Acacia jacquemontii* Benth	Chigard	SBK 117	Mimosaceae	Tree	Leaves	Snake bite, Scorpion stung, induce spontaneous abortion	Infusion/ Crushed leaves	17	0.14	3	0.17
2.	*Adiantum capillus-veneris* L.	Larzok	SBK 118	Pteridaceae	Herb	Whole parts	Urine problem, hair loss, asthmatic, wound healing	Infusion	5	0.01	4	0.5
3.	*Aerva javanica* (Burm.f.) Juss. ex-Schult.	Moreaposho	SBK 19	Amaranthaceae	Shrub	Seeds	Ear pain, menstrual problem, Eyes infection	Decoction Mix with milk	12	0.1	3	0.25
4.	*Alhagi maurorum* var. turcorum (Boiss.) Meikle	Shinz	SBK 54	Fabaceae	Shrub	Stem	Diabetes	Infusion	15	0.12	1	0.06
5.	*Allium cepa* L.	Pimaz	SBK 61	Alliaceae	Herb	Blub	Pimples, Constipation, Cough	Paste/ raw stem, leaves	8	0.06	3	0.37
6.	*Aloe aageodonta*	Karzay Arwa	SBK 232	Xanthorrhoeaceae	Herb	Leaves	Pain, hair falling, Acne	Gel Rubbing	16	0.13	3	0.18

	L.E.Newton											
7.	*Asphodelus tenuifolius* Cav.	Pimaluk	SBK 12	Xanthorrhaceae	Herb	leaves	Laxative in children	Infusion	9	0.1	1	0.11
8.	*Atriplex canescens* (Pursh) Nutt.	Sorechk	SBK 32	Amaranthaceae	Shrub	Fruits	Throat, Throat infection	Infusion	12	0.1	2	0.16
9.	*Azadirachta indica* A.Juss.	Shirish	SBK 99	Meliaceae	Tree	Seeds, leaves	Fever, pain, coaling, coughing	Crushing and infusion	17	0.14	4	0.23
10	*Blepharis ciliaris* (L.) B.L.Burtt	Sagi Datan	SBK 63	Acanthaceae	Shrub	Seeds	Throat Pain, Cough	infusion in milk	14	0.11	2	0.14
11	*Boswellia* serrata Roxb. ex Colebr.	Kondrik	SBK 45	Burseraceae	Herb	Milky exudates	To prevent children from viral attack joint pain, cough, diarrhea, dysentery, stomach pain, edema, hydrocele, toothache, headache	Infusion	15	0.12	7	0.46
12	*Calotropis procera* (Aiton) Dryand.	Kark	SBK 72	Apocynaceae	Tree	Leaves and gums	Diabetes, acidity, blood pressure, kills warm of ears, wasp bite	Infusion/ paste the gum	16	0.13	5	0.31
13	*Cannabis sativa* L	Bhang	SBK 35	Cannabaceae	Herb	Leaves	Hypnotic	Powder	18	0.15	1	0.05

14	*Capparis acutifolia subsp. bodinieri* (H.Lév.) M.Jacobs	Khraf	SBK 119	Capparaceae	Shrub	Leaves	Killing of Ear warms, Stomach, joints pain	infusion	5	0.04	4	0.8
15	*Capparis decidua* (Forssk.) Edgew.	Kaler	SBK 64	Capparidaceae	Tree	Fruit, stems	Vomiting, joints pain	Swallow fruits/decoction	14	0.11	2	0.14
16	*Caralluma tuberculata* N.E.Br.	Hapothag	SBK 120	Asclepiadaceae	Herb	Whole parts	Stomach pain	Grind	14	0.11	1	0.07
17	*Chenopodium murale* L.	Kalpar	SBK 81	Lamiaceae	Shrub	Leaves	Stomach pain, Cardiomyopathy, Arrhythmias	Decoction/ raw leaves	5	0.04	3	0.6
18	*Chrozophora tinctoria* (L.) A.Juss.	Kapowt chamm	SBK 312	Euphorbiaceae	Tree	Gum	Coryza, bronchitis,asthma, cough	Paste	14	0.11	5	0.35
19	*Citrullus colocynthis* (L.) Schrad	Goonj	SBK 64	Cucurbitaceae	Herb	Seed and fruit	Toothache, Stomach infection, constipation, Diabetes	Swallowing	17	0.14	5	0.29
20	*Citrus assamensis*	Namera	SBK 51	Rutaceae	Shrub	Fruits	Tiredness	Decoction	3	0.02	1	0.33

	R.M.Dutta & Bhattacharya											
21	*Cocculus pendulus* (J.R.Forst. & G.Forst.) Diels	Zamur	SBK 65	Menispermaceae	Tree	Whole part	Headache, hair falling, itches	Paste	16	0.13	3	0.18
22	*Commiphora wightii* (Arn.) Bhandari	Kohe Bodh	SBK 300	Burseraceae	Tree	Gum	Chest pain	Decoction	3	0.02	1	0.33
23	*Convolvulus ulicinus* Boiss	Dowlo	SBK 55	Convolvulaceae	Shrub	Whole parts	Ulcers, high blood pressure, vomiting, diabetes	Powder	12	0.1	5	0.41
24	*Convolvulus virgatus* Boiss.	Dolakho	SBK 66	Convolvulaceae	Herb	Leaves, young stems	Joints pain, diarrhea, laxative	Crush	14	0.11	3	0.21
25	*Corchorus depressus* (L.) stocks	Mondero	SBK 162	Tiliaceae	Herb	Whole parts	Cut, wounds, burns of heal	Paste	13	0.10	2	0.15
26	*Coriandrum sativum* L.	Genach	SBK 75	Apiaceae	Herb	Whole parts	constipation, diarrhea, nausea, athlete's foot	Decoction	15	0.12	4	0.26
27	*Crocus abantensis* T.Baytop & B.Mathew	Zafran	SBK 189	Iridaceae	Shrub	Flower	Stomach pain	Infusion	6	0.05	1	0.16
28	*Cymbopogon ambiguus* (Hack.) A.Camus	Sabaz pana	SBK 11	Poaceae	Herb	Leaves	Stomach, cough, pain	Infusion	6	0.05	3	0.5

29	*Cynodon aethiopicus* Clayton & Harlan	Chaad	SBK 12	Poaceae	Herb	Whole parts	Running diarrhea	Infusion	18	0.15	1	0.05
30	*Daucus aleppicus* J.Thiébaut	Gazreek	SBK 13	Apieceae	Herb	Stem and seed	Colorblindness, eyes infection, stomach pain, heart problem	Chewing / infusion	26	0.21	3	0.22
31	*Ducrosia anethifolia* (DC.) Boiss	Gwathag	SBK 39	Apiaceae	Herbs	Seeds, flower	Several pain, Breathing, chest pain, tiredness, Gastric	Infusion	16	0.13	5	0.31
32	*Eucalyptus globulus* Labill.	Bam	SBK 201	Myrtaceae	Tree	Leaves	Sneezing	Fragrance	7	0.05	1	0.14
33	*Euphorbia helioscopia* L.	Sheerago	SBK 76	Euphorbiaceae	Shrub	Leaves, seeds	Malaria, dysentery, cough, cancer.	Infusion	5	0.01	4	0.8
34	*Euphorbia hirta* L.	Haliko	SBK 96	Asteraceae	Herb	Leaf, Seeds and stem	Stomach pain, Diarrhea	Raw leaves/Liquid juice	6	0.05	2	0.33
35	*Fagonia indica* Burm.f.	Karkawag	SBK 209	Zygophellacea	Herb	All parts	Cancer, Fever, Chronic fever	Powder	13	0.10	4	0.30
36	*Ficus caatingae* R.M.Castro	Anjeer	SBK 07	Moraceae	Tree	Leaves, Fruits	Pimple, diarrhea, acidity problem, constipation,	Raw fruit/powder	24	0.2	3	0.13

37	*Gossypium herbaceum* L	Karpass	SBK 150	Malvaceae	Shrub	Seed	Skin pimples, diarrhea, headache, fever, nausea	Paste	6	0.04	5	0.83
38	*Hordeum vulgare* L.	Jahoo	SBK 218	Lamiace	Herb	Whole parts	Diabetes, cancer prevention, obesity,	Cooked/decoction	14	0.11	3	0.21
39	*Iphiona aucher* (Boiss.) Anderb	Kulmorag	SBK 215	Asteraceae	Shrub	Whole part	swelling, snack bite, wounds, joints pain	Paste	15	0.12	4	0.26
40	*Jaubertia aucheri* Guill	Thusso	SBK 121	Rubiaceae,	Herb	Whole parts	Itching of body, Fever, Indigestion	Decoction /infusion	12	0.1	3	0.25
41	*Juniperus angosturana* R.P.Adams	Apurs	SBK 284	Apressaceae	Shrub	All parts	Delirium of fever	Decoction	3	0.02	2	0.66
42	*Lactuca abietina* (Boiss. & Balansa) Bornm.	Ass	SBK 197	Asteraceae	Herb	Leaves	Stomach, cough, asthma, bronchitis	Raw leaves	7	0.05	4	0.57
43	*Lactuca serriola* L	Mahri Alakho	SBK 15	Asteraceae	Herb	Whole parts	Fever, urinary tract problem, asthma, whooping cough, joints pain,	Chewing	33	0.27	7	0.21

							painful menstrual periods, headache					
44	*Nerium oleander* L.	Johr	SBK 111	Apocynaceae	Herb	Leaves	cardiac illness, corns, scabies, asthma, diabetes	Paste	9	0.01	5	0.55
45	*Lawsonia inermis* L	Hini	SBK 131	Lythraceae	Shrub	Leaves	Erythromelalgia	Paste	17	0.14	1	0.05
46	*Lycium barbarum* L	Renzok	SBK 265	Solanaceae	Tree	Leaves	Conjunctivitis, headache, fatigue, dizziness, abdominal pain, infertility	Raw leaves/Infusion	25	0.20	1	0.04
47	*Maerua crassifolia* Forssk	Jugar	SBK 221	Capparaceae	Tree	Leaves, fruits	Headache, stomach, tick infection, digestive disorder	Raw fruits/ paste	16	0.13	4	0.25
48	*Medicago sativa* L	Espost	SBK 83	Fabaceae	Herb	Whole parts	kidney problems, fever, cardio tonic, depurative, anti-rheumatic,	Decoction	15	0.12	5	0.33
49	*Mentha spicata* L.	Pudina	SBK 05	Lamiaceae	Herb	Leaves	common cold, respiratory, stomach pain	Infusion	4	0.02	3	0.75

50	*Myristica cagayanensis* Merr.	Josbak	SBK 115	Myristicaceae	Tree	Fruit	Bone pain, stomachache.	Infusion	3	0.01	2	0.66
51	*Nannorrhops ritchieana* (Griff.) Aitch	Kosh	SBK 215	Arecaceae	Shrub	Stem, leaves, fruit	Conjunctivitis, Acidity, stomach disease	Raw	13	0.10	3	0.13
52	*Nepeta praetervisa* Rech.f.	Simsok	SBK 70	Lamiaceae	Shrub	Leaves	Fever, infection, cold, chest	Infusion	2	0.01	3	0.23
53	*Nepeta racemosa* Lam.	Lechok	SBK 254	Lamiaceae	Shrub	Leaves	Asthma, cough, stomach, diarrhea	Infusion	13	0.10	2	0.15
54	*Ocimum basilicum* L.	Nazbo	SBK 04	Lamiaceae	Shrub	Seeds and leaves	Eyes infection, stomach pain, Hatching, fevers, coughs, flu, asthma, bronchitis, influenza, diarrhea	Decoction	17	0.14	10	0.58
55	*Ocimum tenuiflorum* L	Kalampor	SBK 77	Lamiaceae	Tree	Seeds, Leaves	cough, asthma, indigestion, gastric ailments,	infusion	16	0.13	3	0.18
56	*Oligomeris linifolia* (Vahl ex Hornem.) J.F.Macbr	Izbothk	SBK 08	Resedaceae	Herb	Aerial parts	Fever, throat pain, cough, (goat stomach)	Infusion	13	0.10	4	0.30

57	*Opuntia aciculata* Griffiths	Kotango	SBK 342	Cactaceae	Shrub	leaf	Whiskers, diabetes, high cholesterol, obesity, hangovers.	Paste/decoction	14	0.11	5	0.35
58	*Orostachys aggregata* (Makino) H. Hara	Godhar	SBK 90	Barseraceae	Shrub	Leaves, Seeds and Gum	Fever, Bones pain, heart, stomach	Decoction	17	0.14	4	0.23
59	*Papaver somniferum* L.	Hashah	SBK 33	Papaveracea	Shrub	All parts	Hypnotic	Decoction	3	0.02	1	0.33
60	*Peganum harmala* L	Gandako	SBK 34	Zygophyllacea e	Herb	Seeds	Cancer, period pain	Smoking/decoction	14	0.11	2	0.14
61	*Periploca aphylla* Decne	Geshter	SBK 172	Asclepiataceae	Shrub	Young twigs	Diarrhea, Relieve Pain, Acidity	Decoction	13	0.10	3	0.23
62	*Phoenix acaulis* Roxb	Mach	SBK 202	Arecaceae	Tree	Leaves, fruit	Acidity, constipation, weakness	raw fruits/chewing leaves	35	0.29	3	0.08
63	*Pistacia atlantica* Desf.	Gowan	SBK 06	Anacardiaceae	Tree	Leaves	Wounds, coughs, renal disorders, stomach disease	Raw fruits/crush the decoction	14	0.11	5	0.35
64	*Plantago afra* L	Danichk	SBK 313	Plantagaceae	Shrub	Seed	Stomachache	Infusion	5	0.04	1	0.02
65	*Pluchea arguta* Boiss.	Majol sar	SBK 181	Asteraceae	Shrub	All parts	Use for warm	Decoction	3	0.02	1	0.33
66	*Prosopis abbreviata* Benth	Bahbor	SBK 180	Fabaceae	Tree	Leaves	leprosy, dysentery, asthma, leucoderma	Powder	15	0.12	2	0.13

67	*Caralluma tub erculata* N.E.Br.	Marmootag	SBK 93	Asclepiadaceae	Herb	Whole plants	skin rashes, diabetes, cancer, snake and scorpion bites,	paste	6	0.05	5	0.83
68	*Prosopis cineraria* (L.) Druce	Kahur	SBK 264	Mimosaceae	Tree	Leaves, gum	To remove puss, Tonic, diarrhea	Paste/decoction	16	0.13	3	0.18
69	*Punica granatum* L.	Anar	SBK 131	Punicaceae	Tree	Fruit, seeds	Dysentery, cardiovascular disease, wound healing osteoarthritis,	Chewing /Powder	26	0.21	1	0.03
70	*Rhazya stricta* Decne	Ashreck	SBK 138	Apocynaceae	Shrub	Shoots	Diarrhea, Tooth pain, ulcer, stomach worm	Decoction/paste	12	0.1	4	0.33
71	*Ricinus communis* Lr	Murpadh	SBK 202	Euphorbiaceae	Tree	Seeds	Backache, muscle aches, constipation, expulsion of placenta, gallbladder pain, period pain, .	Extracted oil	25	0.20	6	0.24
72	*Rosa rubiginosa* L.	Gulab	SBK 101	Rosaceae	shrub	Flowers, buds	Remove stone of kidney, asthma	Infusion	10	0.1	2	0.2
73	*Rumex acetosa* L.	Hari Gosh	SBK 323	Polygonaceae	Herb	Leaves, Seed	chest pain, cough, diarrhea, scurvy, cancer, fever	Infusion	15	0.12	6	0.4
74	*Rumex vesicarius* L	Throshpok	SBK 178	Polygonaceae	Herb	Leaves	Liver problem, nose pain	Infusion	5	0.04	2	0.4

75	*Salvadora persica* L.	Kahbarh	SBK 133	Salvadoracea	Tree	Whole part	Gas, Headache, breathing problem	Infusion	16	0.13	3	0.18
76	*Santolina pinnata* Viv.	Bebe botag	SBK 262	Asteraceae	Herb	All parts	Joints, Cancer, Urinary tract infections, Wound infections	Decoction	5	0.02	4	0.8
77	*Schweinfurthia papilionacea* (L.) Bois	Drondh	SBK 18	Plantaginaceae	Herb	Leaves	Sneezing	Decoction	25	0.20	1	0.04
78	*Sesamum indicum* L.	Konchitho	SBK 17	Pedaliaceae	Shrub	Seeds	High blood pressure.	Extracted oil	14	0.11	1	0.07
79	*Sophora affinis* Torr. & A.Gray	Shankestar	SBK 19	Fabaceae	Shrub	Leaves & shoot	Pain, Breathing problem, injury	Decoction	14	0.11	3	0.21
80	*Sorghum halepense* (L.) Pers.	Gomaz	SBK 120	Poaceae	Herb	Seed	Inflammation, anti-allergy	Powder	3	0.02	2	0.66
81	*Stipagrostis plumosa* Munro ex T.Anderson	Mahzonk	SBK 169	Poaceae	Shrub	Whole part	Hepatitis	Decoction/infusion	24	0.2	1	0.04
82	*Suaeda aegyptiaca* (Hasselq.) Zohary	Semsor	SBK 55	Amaranthaceae	Shrub	Leaves	Blood pressure, acidity, cough	Infusion/raw leaves	4	0.02	3	0.75
83	*Tamarindus indica* L	Chechak	SBK 56	Fabaceae	Tree	Fruits	Diarrhea, dysentery, respiratory	Infusion	5	0.04	6	0.35

							problems, fever, malaria, parasitic infestation.					
84	*Tamarix aphylla* (L.) H.Karst.	Kolwae Gaz	SBK 123	Tumaricaceae	Tree	Leaves	Skin infection, cough, chest pain	Paste / smoking	21	0.17	3	0.14
85	*Tamarix stricta* Boiss	Guz	SBK 35	Tamericaceae	Tree	Milky Exudates, whole part	Cattle fever, Breathing problem	Smoking in cattle/ Infusion for human	7	0.05	2	0.28
86	*Taverniera spartea* (Burm.f.) DC.	Lanto	SBK 36	Leguminosae	Herb	Roots	Jaundice	Paste	13	0.10	1	0.07
87	*Tecomella undulata* (Sm.) Seem	Parpokh	SBK 155	Bignoniaceae	Herb	Stems, leaves, flower	Constipation, menstrual cycle, stomach pain, sterile women	Decoction	14	0.11	4	0.28
88	*Tephrosia apollinea* (Delile) DC	Mathkenok	SBK 217	Fabaceae	Shrub	Leave	Acne, earache	Paste/decoction	3	0.02	2	0.13
89	*Teucrium stocksianum subsp. gabrielae* (Bornm.) Rech.f.	Kalporag	SBK 122	Lamiaceae	Shrub	Areal parts	Several pain inside body, Vomiting, Typhoid	Decoction	15	0.12	3	0.2

90	*Trichodesma africanum* (L.) Sm.	Charmaing	SBK 21	Boraginaceae	Shrub	Leaves	Cough and breathing problem	Infusion	25	0.20	2	0.08
91	*Trigonella anguina* Delile	Shimsh	SBK 13	Fabaceae	Herb	Leaves	Stomach gas, diabetes	Raw leaves/Powder	16	0.13	2	0.12
92	*Triticum aestivum* L.	Ghala	SBK 291	Lamiaceae	Herb	Seeds	Stroke, myocardial infarction	Decoction	14	0.11	2	0.14
93	*Verbascum thapsus* L	Kohe bangh	SBK 287	Scrophulariaceae	Shrub	Leaves	Irritation of urinary bladder, migraine headaches, spasmodic coughs, diarrhea, asthma	Powder	14	0.11	2	0.14
94	*Vicia faba* L	Bakalenk	SBK 69	Fabaceae	Shrub	Leaves	Pimples	Paste	2	0.01	1	0.5
95	*Vitex acuminata* R. Br	Gowanikh	SBK 328	Lamiaceae	Shrub	Leaves	Stomach pain, kidney stone, diabetes	Infusion	4	0.03	2	0.5
96	*Vitis acerifolia* Raf	Angoor	SBK 232	Vitaceae	Climber	Fruits, leaves	Chest infection, joints pain fever, asthma, jaundice	Raw leaves and fruits	15	0.12	2	0.13
97	*Withania coagulans* (Stocks) Dunal	Paneerbad	SBK 132	Solanaceae	shrub	Seed	Gastric problem, pimple	Paste/ infusion	14	0.11	2	0.14

98	*Zataria multiflora* Boiss.	Izghand	SBK 9	Lamiaceae	Shrub	Aerial parts	Diuretic, Anti parasite, anti-flatulence, Diarrhea, Vomiting, liver disease, appetizer	Infusion	29	0.24	7	0.24
99	*Ziziphora clinopodioides* lam.	Gowatkag	SBK 10	Apiaceae	Herb	Whole parts	Sneezing, Chest pain, Breathing problem, control acidity	Paste/decoction	14	0.11	4	0.28
10	*Ziziphus mauritiana* Lam.	Kunir	SBK 373	Rhamnaceae	Tree	Leaves	To remove heat from head	Paste	17	0.14	1	0.05

In addition to scientific and local names, voucher numbers, life forms, applications, parts used, disease treatments, and preparation techniques, the study identified 100 medicinal plant species from 55 families (Table 3.3). The families with the highest representation were Asclepiadaceae, Mimosaceae, Euphorbiaceae, and Capparaceae (3 species each), Lamiaceae (26 species), Asteraceae (7 species), Fabaceae (6 species), and Poaceae (4 species).(Table 3.2).

3.5 Plant Life Forms

A variety of environments, including home gardens, roadsides, marshes, mountains, woodlands, meadows, and shrublands, were used to gather medicinal plants. Of these plants, about 40% were cultivated and 60% were wild. Based on factors like availability, collection status, growth circumstances, and parts used, the conservation status of 80 wild medicinal species was evaluated. Because they can withstand high temperatures, shrubs were the most often used vegetation in the Kech (Turbat) and Berbere (East Africa) regions (Hussain *et al*., 2012; Figure 3.2).

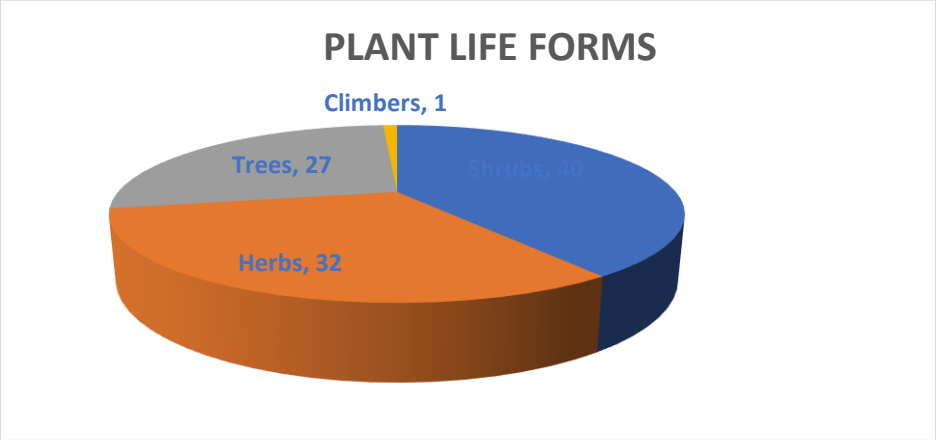

Figure.3.2 Percentage of plants life forms utilized by the inhabitants of the district Kech area.

3.6 Use Categories and Use Reports in the Kech Area

District Kech in Turkbat traditionally uses medicinal plants to treat various illnesses, including gastrointestinal, respiratory, and skin issues. Most plant species are used for gastrointestinal disorders, with a preference for herbal treatments. This aligns with global ethnobotanical trends, highlighting the cultural and practical importance of medicinal plants in the region. (Bibi *et al*., 2014; Heinrich *et al*., 1998; Miraldi *et al*., 2001; Ghorbani, 2005, 2011; Ullah

et al., 2013; Sadeghi *et al*., 2014). The below **Table 3.4** shows the percentage of species and citation in each medicinal use category in district Kech (Turbat).

Table 3.4 percentage of species and citation in each medicinal use category in district Kech (Turbat).

S#	Disease category	No of use report	%age of use reports	No of species	%age of taxa used	Informant consensus factor (ICF)
1	Antidote (snake bite, wasp bite, Scorpio bite)	5	3	4	2	0.25
2	Blood circularity system disorders (Liver disease, high blood pressure, heart problem, cardiomyopathy, arrhythmias, cardiovascular, arthritis,)	11	5	7	4	0.4
3	Dermatological problem (freckles, pimples, acne, remove pass, remove heat from head, injury, itching of body, cut, wound, fairness, leprosy, leucoderma)	23	10	8	8	1.0
4	Ear, Nose and throat disease (ENT)(throat, kill ear warm, earache, colorblindness, eye infection, dizziness)	11	5	9	4	0.2
5	Eye disease (eye disease, conjunctivitis problem)	5	3	4	2	0.25
6	Gynecological problem (induce spontaneous abortion, period pain, menstrual cycle, premenstrual	12	5	8	4	0.36

	syndrome (PMS), infertility, sterile women, expulsion of placenta)					
7	Gastrointestinal disease (constipation, stomach pain, gastric, diarrhea, hydrocoele (used for goat stomach), purgative, vomiting, gas, digestive disorder, ulcer disease, control acidity, abdominal pain, dysentery, laxative, running diarrhea, indigestion, appetite)	74	28	40	23	0.46
8	Glandular disorders (Jaundice, Diabetes, breast pain, hepatitis, gallbladder pain, jaundice)	13	6	8	5	0.41
9	Hair tonic (hair fall, hair loss)	3	2	2	2	0.5
10	Infectious disease (fever, anti-inflammatory, chronic fever, erythromelalgia, typhoid, cattle fever, tick infection, dysentery, malaria, parasitic infection, fever infection, bronchitis)	15	6	14	5	0.6
11	Musculoskeletal disorders (several pain, toothache, headache, bone pain, osteoarthritis, joints pain, backache)	21	9	7	7	0.7
12	Other disease (tiredness, protection children from viral attack, burning of heal, hypnotic, fatigue, cancer, swelling)	27	11	8	9	1.0

13	Respiratory disease (breathing problem, chest pain, cooling, cough, flu, asthma, influenza, sneezing, whooping cough, common cough)	50	20	26	17	0.48
14	Urogenital problem (urine problem, urinary inflammation, kidney stone, urinary tract infection)	8	4	6	3	0.28
	Total	272	117	151	102	7.36

3.7 Method of Preparation and Application

In Turbat, medicinal herbs were prepared using various methods, including infusion and decoction, paste, raw, powder, crushing, chewing, smoke, extracted oil, and liquid juice, similar to those in Northern Pakistan. (Malik *et al*., 2019; Ahmad *et al*., 2014).

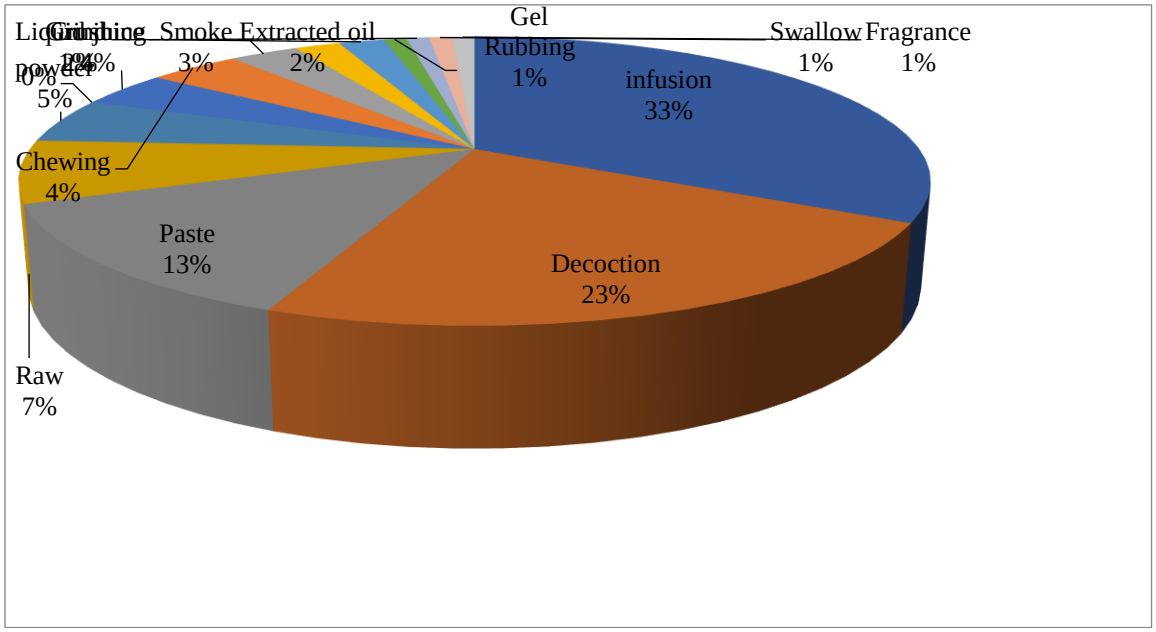

Figure. 3.3 Percentage of herbal medicinal formulation of district Kech (Turbat)

3.8 Utilization of Plant Parts

Various elements of medicinal plants, such as leaves, roots, whole plant, fruits, stems, gum, and

flowers, were employed for traditional therapies in the current study. The most often used portion (30%) was the leaves because of their abundance in bioactive substances and readily extracted phytochemicals. Roots (16%), whole plant (16%), stem (10%), fruit (7%), and gum (5%) came next. These results are in line with earlier research showing that leaves are the most commonly utilised ingredient in herbal treatments (Ahmad *et al*., 2014).

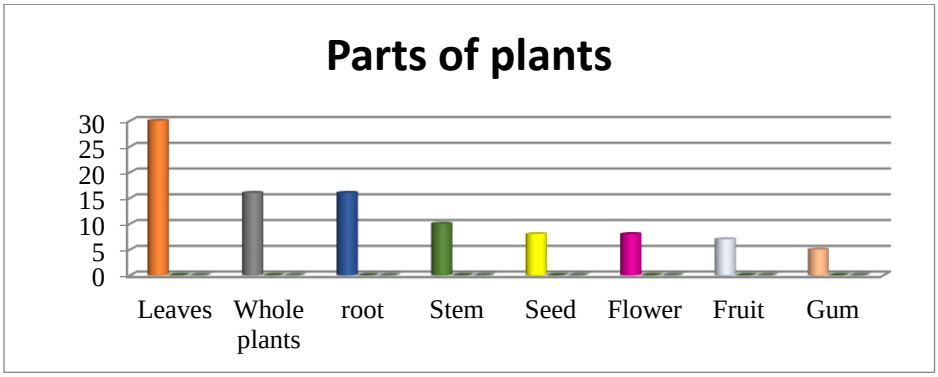

Figure.3.4 Percentage of plants parts used in district Kech (Turbat).

3.9 Threats to Medicinal Herbs and Traditional Medical Knowledge

Due to environmental issues, illiteracy, and generational gaps, traditional medicinal knowledge and herb use are in danger. Younger generations are more interested in modern schooling and metropolitan occupations than in learning ancient methods, and the majority of knowledgeable healers are over 50. If there are no written records, important information could be lost. Medicinal species are further endangered by environmental factors such as overgrazing, agriculture, deforestation, and overharvesting of entire plants. This circumstance, which is also seen in places like South East Ethiopia, emphasises how vital it is to preserve the plants and the information.

4. Conclusion

Women were the main informants because of their caregiving responsibilities, and the study revealed 100 medicinal plant species utilised by residents of Kech (Turbat) to cure 272 ailments. Important species such as Citrullus colocynthis, Ocimum basilicum, and Phoenix acaulis demonstrated high values in RFC, UR, FL, and UV, underscoring their importance. The most prevalent plant family was Lamiaceae. The plant part that was most frequently used was the

leaves. Younger generations were unaware of herbal medicines, whereas older respondents were well-versed in them. Certain species can be harmful if used excessively. The results highlight the close ties between the local population and their surroundings as well as the pressing need to preserve the region's biodiversity and knowledge of therapeutic plants.

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